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BUY YOUR BOLTING AND WIRE CLOTH

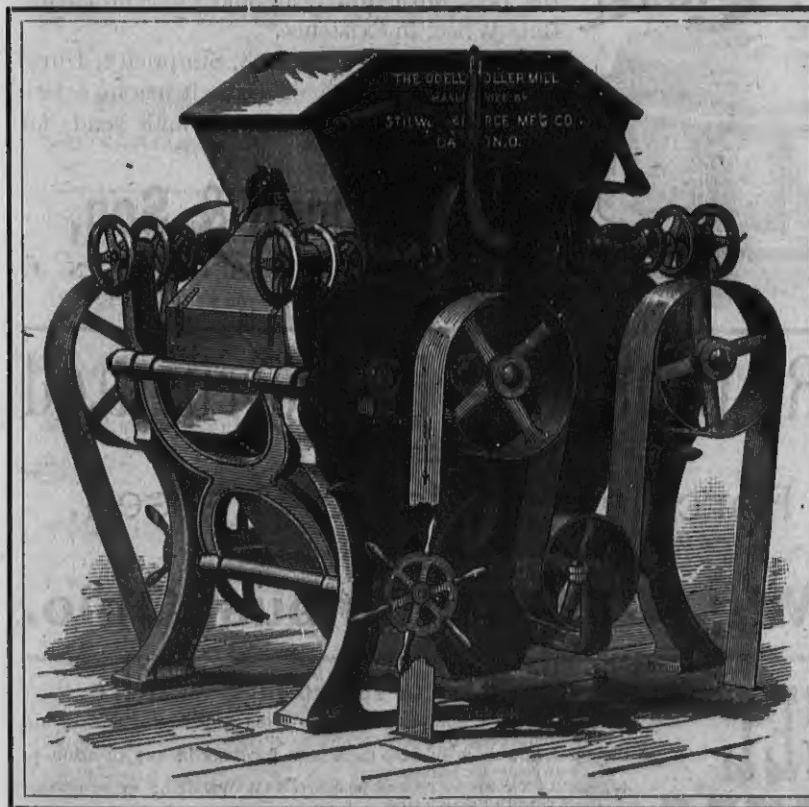
OUR SPECIALTIES

GENUINE DUFOUR BOLTING CLOTH
ALL WORK GUARANTEED

PAT. METALIC FASTENED WIRE CLOTH BINDING

EDW. P. ALLIS & CO., RELIANCE WORKS, MILWAUKEE, WIS.

ODELL'S ROLLER MILL SYSTEM



Is now in successful operation in a large number of mills, both large and small, on hard and soft wheat, and is meeting with unparalleled success. All the mills now running on this system are doing very fine and close work, and we are in receipt of the most flattering letters from millers. References and letters of introduction to parties using the Odell Roller Mill System, will be furnished on application to all who desire to investigate.

Odell's Roller Mill

Invented and Patented by U. H. ODELL, the builder of several of the largest and best Gradual Reduction Flour Mills in the country.

AN ESTABLISHED SUCCESS!

We invite particular attention to the following

POINTS OF SUPERIORITY

possessed by the Odell Roller Mill over all competitors, all of which are broadly covered by patents, and cannot be used on any other machine.

1. It is driven entirely with belts, which are so arranged, as to be equivalent to giving each of the four rolls a separate driving-belt from the power shaft, thus obtaining a positive differential motion which cannot be had with short belts.

2. It is the only Roller Mill in market which can instantly be stopped without throwing off the driving-belt, or that has adequate tightener devices for taking up the stretch of the driving-belts.

3. It is the only Roller Mill in which one movement of a hand lever spreads the rolls apart and shuts off the feed at the same time. The reverse movement of this lever brings the rolls back again exactly into working position and at the same time turns on the feed.

4. It is the only Roller Mill in which the movable roll-bearings may be adjusted to and from the stationary roll-bearings without disturbing the tension-spring.

5. Our Corrugation is a decided advance over all others. It produces a more even granulation, more middlings of uniform shape and size, and cleans the bran better.

WE USE NONE BUT THE BEST ANSONIA ROLLS.

Our Corrugation differs from all others, and produces less Break Flour and Middlings of Better Quality.

Mill owners adopting our Roller Mills will have the benefit of Mr. Odell's advice, and long experience in arranging mills. Can furnish machines on short notice. For further information, apply in person or by letter to the sole manufacturers,

STILWELL & BIERCE MANUFACTURING CO., DAYTON, O., U. S. A.

Agents for Du Four's Bolting Cloth.

or, GEORGE C. TIETJEN, Gen'l Travelling Agt. for the Northwest, Republican House, MILWAUKEE, WIS.



STRAWS



WHICH SHOW HOW STRONGLY THE BEST MILLERS FAVOR THE

GRAY'S NOISELESS BELT ROLLER MILL

AND THE ALLIS SYSTEM OF ROLLER MILLING.

Messrs. C. A. Pillsbury & Co., the largest milling firm in America, after using the Gray Noiseless Roller Mills for four years, in competition with machines of various other makes, when they decided to rebuild the "Pillsbury B," strictly stipulated that no other Roller Mills but the Gray Patent should be used, and all bidders were required to bid with this understanding.

* * * *

The Washburn Mill Co., of Minneapolis, when they decided to rebuild their "Lincoln Mill" made the same stipulation as above, and the firm building the mill, though manufacturers of a rival machine, are forced to use the Gray Noiseless Roller Mills. The Washburn Mill Co. had used the Gray machines for four years, knew their merits, and were not disposed to try any experiments.

* * * *

Messrs. Kidder & Sons, Terre Haute, Ind., after an experience of over four years in using Gray's Noiseless Roller Mills, will use no others, and for the enlargement of their "Avenue" Mills, have ordered eight more of these famous machines.

* * * *

Messrs. Darrah Bros., Big Rapids, Mich., whose mill, built on the Allis System in 1884, was destroyed by fire a few months since, in rebuilding, would use no other machinery or system, and only required in their contract a guarantee that the mill now building for them should be as good as the mill built in 1884.

* * * *

The Lanier Mill Co., Nashville, Tenn., after three years' experience in running the mill built for them on the Allis system, and using the Gray Noiseless Roller Mills, have placed their order for their new 500-bbl. mill at Memphis, Tenn., with the same builders, none other being asked to figure on the work. The Lanier Mill Co. are also increasing the capacity of their present mill, and refitting it on the Allis system. No stronger proof can be given of the superiority and perfect working qualities of the Allis System and Machinery.

* * * *

The Weston Milling Co., Limited, Scranton, Pa., which operates one of the largest bakeries in the East, recently decided to add an extensive roller mill to their plant, and placed their order for a mill on the Allis system, and using the Gray Noiseless Roller Mills, stating that their long experience in using flour from mills in all sections of the country convinced them that the Allis system of milling was far superior to any other, and that they run no possible risk in adopting it, as they knew beforehand what results it would produce.

* * * *

A whole stack of "Straws" like the above are open to the inspection of millers who are interested. The demand for the celebrated Gray Noiseless Roller Mills, as shown by the order books of the manufacturers, is larger now than ever before, and is steadily increasing. The millers of this country are beginning to see that it takes something more than a fine cut and deceptive advertisements to make a good Roller Mill, and that to insure good results when a mill starts, the practical knowledge drawn from years of experience in designing and building the most successful flour mills in America, is worth vastly more than the strongest guarantees or the most plausible theories.

EDW. P. ALLIS & CO.,

RELIANCE WORKS,

MILWAUKEE, WIS.

The United States Miller

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GLASSES AND KISSES.

Deep draughts of wine yield joy divine,
Yet far, far higher bliss is
With him who sips from his dear love's lips
The red, red wine of kisses.

The wine will make him groan and ache
Upon the grievous morrow,
But heavier bane than a drunkard's pain
Is parted lover's sorrow.

And yet, methinks, from him that drinks
I've caught a plan will fit me;
Like him I'll take, when my heart may ache,
A hair of the dog that bit me!

DUSTLESS GRAIN SEPARATOR.

We give here an illustration of the famous "Giant" Dustless Grain Separator, manufactured by Dickey & Pease, Racine, Wis., and would call attention of our readers to the advertisement of it on another page of this paper. The great drawback heretofore with this class of machines has been that they were too expensive for a great majority of millers, but the Giant overcomes this difficulty as the cost is from *one-third to one-half* lower than for any other. It also combines great durability with the most perfect cleaning, separating and screening qualities, and large capacity. There is no excuse now for people who have grain to clean, being annoyed with *Dust*. It will cost nothing to write to the manufacturers for full descriptive circulars and prices, and we would advise our readers to do so even though they may not be in present need, as they will then know whether this machine is just what they want or not, and will know where to get one.

THE DUST COLLECTOR MATTER.

The following orders of the County Court, Milwaukee County, show the present condition of the Dust Collector litigation.

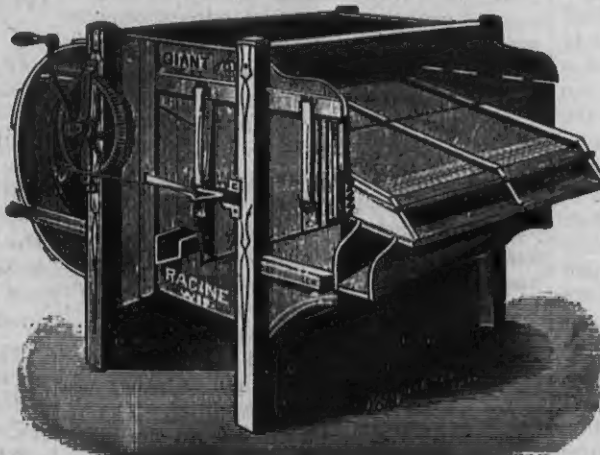
COUNTY COURT, MILWAUKEE COUNTY.

Alva H. Kirk, William J. Fender,
Samuel L. Bean, and the George
T. Smith Middlings Purifier Com-
pany, Plaintiffs,
vs.
The Milwaukee Dust Collector
Manufacturing Company,
Defendant.

The motion of the defendant for a preliminary injunction in the above entitled action having come on to be heard this 6th day of June, 1885, and the plaintiffs' attorneys having applied for a continuance thereof; and the Court having heard the respective counsel of plaintiffs and defendant upon said application for continuance, and upon defendant's said motion for a preliminary injunction; and the Court having duly considered the matter:

It is ordered, that the said motion be and the same is hereby continued until Saturday, June 20th, 1885; and in the meantime, on defendant giving an undertaking in the sum of \$50,000, conditioned to pay to

said plaintiffs such damages as they may sustain by preliminary injunction, if the Court shall finally decide that the defendant was not entitled thereto, and until the further hearing of said motion, it is further ordered, upon the summons and complaint, the answer and counterclaim of defendant, the testimony of said William J. Fender, and the affidavits of Julius Schlesinger and John M. Stowell, that the said plaintiffs, Alva H. Kirk, William J. Fender, Samuel L. Bean, and George T. Smith Middlings Purifier Co., and each of them and each of their attorneys, counsellors, agents, servants and assistants, under the penalties, by the law prescribed, do absolutely desist and refrain, from engaging in or resuming the manufacture and sale of Dust Collectors within the United States, in so far as exclusive license was vested in defendant for that purpose, under and by the agreements mentioned in the pleadings herein, or under the Letters Patent set forth in the answer of the defendant herein; and do absolutely desist and refrain from slandering the title of this defendant to manufacture, sell and license Dust Collecting Machines under any or all of the Letters Patent of the United States mentioned in said agreement, or in any way questioning or controverting the right of defendant to manufacture and sell said Dust Collectors under said patents, and also absolute-



"GIANT" DUSTLESS GRAIN SEPARATOR.

ly desist and refrain from all attempts by letter circular, advertisement, words of mouth, or other means, to divert the good will and patronage of this defendant to themselves, or into other channels.
June 6th, 1885. By the Court,

J. E. MANN,
County Judge.

COTZHAUSEN, SYLVESTER, SCHNEIDER & SLOAN,
Atty's for the Milwaukee Dust Collector Mfg. Co.

FLANDERS & BOTTOM,
Atty's for Licensees.

CIRCUIT COURT, MILWAUKEE COUNTY.

Alva H. Kirk, William J. Fender,
Samuel L. Bean, and the George
T. Smith Middlings Purifier Com-
pany, Plaintiffs,
vs.

The Milwaukee Dust Collector
Manufacturing Company,
Defendant.

It is hereby orderd, that the injunctonal orders made in this cause dated the 6th day of June, 1885, be and the same is hereby continued in force in all respects until the trial and final disposition of the cause.
Dated June 25th, 1885. By the Court,

CHARLES A. HAMILTON.

Circuit Judge.

THE agricultural department estimates the total wheat crop of the country at 360,000,000 bushels. The condition of winter wheat is lower than ever before in June, and the average yield will be less than ten bushels per acre. There is an increase in the cotton area of 5 to 6 per cent. and a general average condition of 92 per cent. Reports from the principal tobacco-growing sections in the northern states show a decrease of acreage in New England, New York and Pennsylvania, and an increase of one-fourth in Wisconsin.

AMERICAN FLOUR IN BRAZIL. — Brazil buys from the United States, say five million to six million dollars' worth of flour in a year. American exporters, when flour is cheap, as it is now, occasionally send largely increased quantities, and expect that a market will be made for it. Its cheapness, how ever, seems hardly to make a difference in the quantity consumed. Some 80,000 barrels a month are consumed at Rio and its dependent markets, and it seems almost impossible to increase this consumption. At Rio the bread is all made by bakers; it is of good quality and is eaten by all classes. The great obstacle in expending consumption is the lack of internal transportation, and the fact that the mass of the people have never been accustomed to use flour, they being satisfied with the flour made from the mandioca root, and which they habitually eat mixed with their stewed

black beans and dried beef. A large part the interior population produce and buy but little. They live in a primitive manner, in cheap dwellings with thatched roofs and earth floors, sleep in hammocks, use the scantiest of articles of furniture, and even convey their food to their mouths with their fingers. Men, women and children go barefooted the year round, and the red woolen blanket that is used for a cover at night has to serve for a shawl or cloak on a wet day. Imagine all that country as large as all that part of the United States east of the Rocky Mountains supplied with as many miles of railway as are in operation in the State of Massachusetts, and you will have an idea of communication in Brazil and of the difficulties of rapidly increasing consumption.

Sparks' store and flouring-mill at Madison, D. T., with 6,000 bushels of wheat and 500 barrels of flour, was burned recently. Loss, \$35,000; no insurance.

CLEARLY DEFINED.

He who carries loads of stocks,
In his safe or in his box,
And to hold them has the rocks—
That's a bull.

He who sells what he has not;
Knocks the prices, cold or hot;
Hopes the world will go to pot—
That's a bear.

He who comes down every day,
Hits the market any way,
Lies in wait for guileless prey—
That's a broker.

He of cheek, and quite a fop,
Wages small, high life can't stop,
Blows his dust into bucket shop—
That's a clerk.

Mr. Fresh, the silly "bloke,"
Who does his cash in Wall street soak,
And goes home later, fat, dead broke—
That's a lamb.

CONNECTICUT SPOOKS 50 YEARS AGO.

One of the strangest cases of witchcraft on record was that which befell a worthy family in North Canaan, Conn., over half a century ago. The Boardmans were a family well-known for their industry and integrity. They were attendants and members of Rev. Mr. Brown's Congregational church. The clergyman wore a long camel coat and a broad-brimmed hat; and he was a godly man, firmly believing in the power of prayer. The Boardmans lived in an old-fashioned brown farm house. It was two stories high in front, sloping down to a single story in the rear. In the rear of the house was a woodshed running in an L shape from the main building. Over the wood piled beneath it was a chamber which served as a farmer's store-house. To reach this place there was an inclined plane which could be removed at pleasure. Two or three men could in a minute put it in place or take it away. From the woodhouse chamber there was a low door about three feet high, fastened with a loose wooden button, which led into the rear kitchen chamber. From the roof depended strings of red peppers, seed corn, herbs, woodchuck skins and everything else that could be thought of as having a place in a Litchfield county farm-house chamber. The door between the woodhouse chamber and the chamber over the kitchen of the farm-house could be easily opened by shaking it to turn the button.

It was late in autumn, and Mr. Boardman had harvested and husked his corn, and had spread it out on the kitchen chamber floor a foot in depth, so as to give it a chance to dry and become marketable. The Boardmans heard noises in the kitchen chamber, and it was believed that witches were at work. One night they were puzzled. They sent for Parson Brown, who lived but a short distance away, and he came with his camel cloak and severe aspect. They listened at the foot of the narrow stairway, which led up into the kitchen chamber, and they heard the steady groaning of something evidently in distress.

Parson Brown reverently uncovered his head, and said, "Let us pray!" He said that the family had recently been afflicted by the powers of darkness, and he prayed for strength to go up and cope with the enemy of mankind. It was after 9 o'clock when he rose from his knees and asked Sister Board-

man to bring him a lantern to face the witches. The door was opened and, lantern in hand, he went up the narrow staircase. Slowly he went up, and the rays piercing through the holes cut in the tin lantern, shone to the end of the kitchen chamber. He saw a pair of bright eyes, heard a grunt, and then there came rushing towards him a terrible monster. It was to all intents and purposes a four-footed witch of Endor, or, more exactly, of North Canaan. It rushed between the parson's legs, and the folds of the camel cloak were tightly wrapped about the back of the monster, and his legs were also fast. Down the stairs rattety bang with wild grunts and shrieks came the strange being with the parson riding down the stairs backward, the lantern beating time on the steps and other opposing objects. The neighbors below rushed for the door, and the monster, finding the door open, rushed out. The parson was caught by the sill and thrown on the floor of the porch. To say that the assemblage of half a dozen were frightened nearly to death just about describes the situation.

What was this unearthly presence?

It was an old sow of Boardman's that was involuntarily playing witch. Tired of confinement in her pen, she got out, walked up the inclined plane, which happened to be in position, and once in the woodhouse chamber she could easily open the small door and get into the kitchen chamber, where was plenty of corn. She over-ate, and her groaning and grunting, caused by indigestion, was the noise of witches whose unearthly doings Parson Brown was called on to quell.

BUCKWHEAT CAKES IN SUMMER.

While a down-town flour merchant watched an employe load a truck with buckwheat flour, the other day, he said: "You would hardly expect to see such a large sale of buckwheat as that at this time of the year, would you?" The fact is, the use of buckwheat is increasing. The restaurants here serve buckwheat cakes the year around, though it strikes a countryman as rather odd to see buckwheat in warm weather. The increased use of this flour is due to the great improvements in its manufacture within the last three or four years. When I was a boy the straw with the grain was piled on the barn floor and pounded with a flail. The straw was then forked off and the grain swept into piles. When the wind was blowing briskly the grain was thrown into the air with shovels, so that the chaff could be blown away, and then the grain was ground between the old-fashioned millstones. The bran was separated from the meal by sifting with a wire-bottomed sieve. The first improvement was made when a silk bolting reel was substituted for a wire-cloth sieve. After a great many years an old York state miller concluded that the meal would have less shuck or bran in it if the shuck could be removed from the berry before it was ground. To do that he run the grain through a series of corrugated rollers which simply cracked open the shuck and allowed the kernels to drop out. The broken shucks and kernels were separated by screens, and thereafter buckwheat flour was about as white as any other. The demand for it increased rapidly, but it was not quite perfect,

because the fine fuzz and dirt adhering to the outside of the berry fell through the screen with the kernels after the shuck had been broken open by the rollers of the shucker. To get rid of this it was necessary to polish each berry of the grain separately before it was shucked. The machine for doing this has just been put on the market. It consists of a cast-iron cylinder, say three feet long and one foot in diameter, which revolves within a jacket made of steel wire-cloth. The cylinder is covered with square knobs a half inch large, which project to within a fraction of an inch of the jacket. The cylinder is set a whirling at the rate of 750 revolutions a minute, and the grain after passing over the screen to get the straw out falls down between the jacket and the cylinder. There it goes around and around, knocking against the knobs and the jacket, an upward current of air carrying off the dust until it falls out below as clean as a hound's tooth, then it slides over a magnetized plate to remove any trace of metal before going to the shucker. That makes what we call perfect buckwheat flour. Most millers have had to relearn their trade within the last five years on account of the improvements introduced in the process of manufacture, but in no branch of the business has the progress of the business been more marked than in the handling of buckwheat."

—New York Sun.

THE CLOSING ACT IN A GREAT PATENT SUIT.

In 1876 Mr. Geo. T. Smith and others brought suit against the firm of Goldie & McCulloch, of Galt, Ontario, for infringement of Smith's Canadian patents, and the case has been constantly before the Dominion courts until the present time, when a final conclusion has apparently been reached. The fight from the first has been a most desperate and determined one on both sides, and the last bottom fact bearing on the questions at issue has been dragged to light.

The first move of the defendants was an application to the Canadian commissioner of patents to have Smith's patents declared void under the provision of the Dominion patent act with reference to foreign patentees, on the ground of importation and failure to commence actual manufacture in Canada. The commissioner found for Smith on both points raised, but on trial of the case before the chancellor of Ontario, in 1880, the defendants again set up the protective clause of the Canadian patent act, and the commissioner's decision was reversed. The plaintiffs then carried the case to the Court of Appeal, where it was heard in the fall of 1880, the court sustaining the ruling of the commissioner of patents, but finding for the defendants on other grounds, raising the question of patentability.

From this decision the plaintiffs again appealed, this time to the Supreme Court of Canada, before which the case was argued in November, 1882, but the conclusions of the court were not made public until June, 1883, when a most comprehensive opinion was rendered, covering every question at issue and declaring for the plaintiff on all points. So far as further proceedings in the Dominion courts was concerned, this was the end of the law, but every subject of the British crown

may, with the consent of the privy council, appeal to the House of Lords of Great Britain, sitting as a court of last resort, and after some little delay the defendants elected to exercise this right.

The argument on their petition for leave to appeal was heard by the judiciary committee of the privy council at London, and on March 4, 1884, the decision of the full council as below given was rendered:

AT THE COURT AT WINDSOR CASTLE, }
THE 4TH DAY OF MARCH, 1884. }

Present:

The Queen's Most Excellent Majesty,
Lord President, Mr. Gladstone,
Lord Chamberlain, Mr. Dodson.

Whereas, There was this day read at the board a report from the judicial committee of the privy council, dated the 1st of March instant, humbly recommending that the petition of John Goldie and Hugh McCulloch, for special leave to appeal in the matter of a cause, entitled, Geo. Thomas Smith and others versus John Goldie and Hugh McCulloch, from a judgement or decree of the Supreme Court of the Dominion of Canada of the 19th June, 1883, be dismissed with costs, and directing that in case Your Majesty should approve the same the sum of thirty-seven pounds, two shillings and two pence sterling be paid by said John Goldie and Hugh McCulloch to the said George Thomas Smith and others for the costs opposing the same.

HER MAJESTY having taken the said report into consideration was pleased by and with the advice of her privy council to approve thereof, and of what is therein recommended and to order as it is hereby ordered that the said petition of John Goldie and Hugh McCulloch be and the same is hereby dismissed by this board with thirty-pounds, two shillings and two pence sterling costs, whereof the governor-general, lieutenant-governor or commander-in-chief of the Dominion of Canada for the time being and all other persons whom it may concern are to take notice and govern themselves accordingly.

C. L. PEEL.

In pursuance of this decision the Supreme Court of Canada sent the case to a master to assess damages due the plaintiff under its judgment of June 19, 1883.

In the course of the proceedings before the master, that official intimated that his finding would be made on the theory that plaintiffs were entitled only to such an amount as they might have realized in profits on the number of purifiers made and sold by the defendants had these machines been built and sold by themselves. The plaintiffs appealed from this ruling, and the appeal was argued before the Hon. Mr. Justice Proudfoot who, on the 3d inst., rendered a decision sustaining the appeal and directing the master to base his assessment of damages on the value of the purifiers to the users to whom defendants have sold, since the dates of the respective machines. This decree is final and cannot be appealed from. Its effect is to vastly increase the amount of damages to be recovered by the plaintiffs, which must be equal to the value of the right to use a middlings purifier, the machine on which the whole system of modern milling is founded and without which it could not be conducted.

What makes the above of special interest to millers in the United States is the fact that something like half a dozen suits are now pending in various United States courts for infringement of the same patents involved in the Canadian litigation, and that there is not nearly as good grounds for defense in these suits as was held by the defendants in the Dominion.

THE MANUFACTURE OF SPLIT PEAS.

In England and in other countries the manufacture of split peas is of commercial importance, but in this country little or no attention is given to it. The process by which the peas are split and hulled is thus described by Craik, and is quite interesting:

The first part of the process consists of soaking the peas in a tank of cold water, or water slightly tepid, if the weather be cold. This must be continued until the farinaceous part within the hull is moistened and swelled, when the hulls being oily and less affected by the absorption moisture, will burst and be loosened by the unequal expansion. The water is then drained off, and the peas elevated to a floor where they are spread out until the superfluous water is dried off, when they are afterwards thoroughly dried in the kiln. This drying must be accomplished without contact with the smoke, or the color and flavor of the grist will be injured. When split peas are made in connection with oatmeal, the drying is generally effected by hurrying a batch of oats from the hot kiln and withdrawing the remaining fire; the peas are then spread upon the kiln, and turned and shifted around until sufficiently dried by the remaining heat in the kiln. Sometimes cylinder driers are used for this purpose; these are a kind of a cross between the cylinder oat kiln dryer before described, and that used for roasting coffee. After being dried and cooled, the peas are split and hulled in the shelling stones which finishes the process except that the hulls must be blown out.

When split peas are made apart from the oatmeal business, they are sometimes split and hulled between a conical cylinder and case, made of strong sheet iron and punched, the rough faces placed together and the peas passing down between these, the space being enlarged or contracted by raising or lowering the revolving cone. Another plan we have seen used for splitting peas, and hulling buckwheat, is a stone, like a barley stone, millstone, or thick grinding stone, and hung like these on a horizontal shaft. It has no case around it, but only a concave of similar stone, and resembling a water trough under a grindstone, this incloses one-fourth or more of the circumference of the stone, and is hung in an adjustable frame, one end having a permanent axis, and the other being set by a screw, either closer or further from the stone, as required. The motion of the stone draws the peas in at the movable end of the trough, and throws them out split at the other end onto a small sieve, which lets through any small fragments and saves them. A small fan then blows out the hulls and the peas are ready for market.

This stone and its concave are both picked in small lines, commencing at the edge and running obliquely to the center, where they meet; those cut into the stone with the wide end of their triangle foremost, and those in the concave in the opposite direction. This arrangement of the lines gathers the peas toward the center where they are thrown out in a round stream.

"GRAIN GAMBLING IN CHICAGO."

The *Commercial Bulletin*, of New York, joins in the hue and cry against "grain and gambling in Chicago." It declares that "more harm has been done in this country

within the past five years by gambling in products, and by the practices to which that sort of business leads, than by any other single influence." It finds that the export movement of grain has repeatedly been stopped by this gambling, that a large surplus has had to be carried over at great expense, that the finances of the country have been unfavorably affected, since it has been necessary to export gold instead of grain, and, finally, that prices have in the end reacted to the injury of owners of grain. *The Bulletin* admits, however, that this sort of business can not be stopped by repealing the charter of the Chicago board of trade. It admits that a body of men acting as a firm under general laws could do pretty much everything that is now done on 'Change, and at the same time could hold property without limit as to amount, while the amount of property that the board can hold is limited. This is quite true. Bad as the alleged "grain gambling" may be, it can not be stopped by legislating against it. It is, in fact, an evil which may safely be left to cure itself. If the "gamblers" put up prices so as to stop exports and play the mischief with the exchanges, they are sure to be the principal sufferers from the inevitable reaction. They find in the long run that this sort of "gambling" doesn't pay, and it does not require any legislation to induce them to stop it. No legislation against speculative operations has ever proved efficacious, even under governments far more arbitrary than ours. Attempts to stop it by legislation here will fail as certainly as like attempts have failed elsewhere.

"SECOND WIND."

The reader may not be aware that in ordinary respiration we only use a portion of our lungs, the cells at the extremity not being brought into play. This is the reason why those who are not "in training," and who try to run for any distance, soon begin to gasp, and, unless they are courageous enough to persevere in spite of the choking sensation, are forced to stop. But if they will persevere, the choking goes off, and the result is what is technically known as "second wind." When the second wind is fully established, the runner does not become out of breath, but goes on running as long as his legs will carry him. I know this by experience, having been accustomed for some years to run three miles every morning over a very hilly road. The fact is, that on starting, the farthest portions of the lungs are choked with effete air and the remainder do not supply air enough to meet the increased circulation caused by exercise. By degrees, however, the neglected cells come into play, and when the entire lung is in working order the circulation and respiration again balance each other, and the "second wind" is the result. Now, let the reader repeat his experiment of holding his breath against time, but first let him force out of his lungs every particle of air that he can expel, and then draw as deep a breath as his lungs will hold. If this be repeated some seventy or eighty times, by way of imitation of the whale, the experimenter will find that he can hold his breath for a minute and a half without inconvenience. Should he be a swimmer, he should always take this "second wind" "taking a header," and he can swim for considerable distances without needing to rise.

DULUTH.

Duluth, further north than any other city in the United States, and 155 miles from St. Paul, came first into prominence as the eastern terminus of the Northern Pacific Railroad. It was a hastily constructed town, and the first created harbor being destroyed by a storm, one of the finest natural harbors in the world was made available in place of it by simply cutting a channel 500 feet wide through a projecting tongue of land into the bay of Superior, one mile in width, upon which the town now faces. This tongue of land, which is called Minnesota Point, is seven miles long and 300 feet to half a mile wide. Facing it at a distance of a mile is another projection into the lake two miles long, called Rice's Point. Between and along these points, which are covered with warehouses, hills and dwelling-houses, has been built one of the most magnificent systems of dockage in the world, affording as it does six miles of commercial frontage. Into the second harbor, formed by Rice's Point, empties the beautiful winding river, St. Louis, which is made the highway for vast quantities of lumber, floated down in logs from the back country. This river forms an extension to the harbor, and is navigable for about twelve miles. The logs are collected and towed down to the mills by steam tugs. A bridge over a mile long has been constructed across the St. Louis river at this point.

Between the bay and the bluff, parallel to it, which rises to a height of 700 feet—upon ground conveniently inclined—are spread the streets and buildings of Duluth, the latter gradually encroaching upon the rugged background, until nearly every projecting boulder has perched upon it a picturesque cottage. Parallel to the bluff runs the main street of the city—Superior street lined on either side with many handsome business buildings, an opera house which would do credit to any metropolis and several large hotels. Stretching in either direction and encircling the bay are the residences—many of modern architectural beauty—churches and schoolhouses. Across the marshy district between the town and the harbor proper, stretch the long trestle-work approaches of several railroads. Beyond them lie the great coal, elevator and warehouse docks, provided with double tracks of railroad. Above the enormous heaps of coal rest huge cranes for unloading, supported upon long structures of timber. Behind them are visible the masts and funnels of the shipping, and in the distance, beyond the reef-like tongue of the land, the dark blue water of the great upper lake. Toward Rice's Point at the right loom up the four great elevators, B, C, D and E, and their accompanying warehouses, 500 feet in length. Still further to the right are seen the chimneys of several large mills. At the left, outside the harbor proper, stand elevator A and that belonging to the St. Paul & Duluth Railroad.

The population, which is fully one-half American, will run between 18,000 and 19,000. The streets are lighted by both gas and electricity, and an efficient system of water-works supplies the city with lake water. The ample supply of street cars. The surplus of the city is used for natural gas, and the city's com-

mercial advantages, begins 150 miles west in the lake and park region of Minnesota, embraces the valley of the Red River of the North, and thence stretches westward far beyond the Missouri.

The surplus grain of all this magnificent country, embracing the best known hard wheat belt of the world, must have water transportation at the nearest point, and herein lies the key to Duluth's greatness.

The first cargo of wheat shipped from Duluth was transported on the steamer Winslow, in August, 1870. The wheat was sent by rail from Southern Minnesota and loaded from cars directly into the steamer for shipment to Philadelphia. These first shipments were the result of a forced movement for the support of the Lake Superior & Mississippi Railroad, now the St. Paul & Duluth. At that time nearly all the wheat grown in Minnesota was raised near the Mississippi and Minnesota Rivers, and in the country between those streams. There were great obstacles in the way of success, among which were the resistance of the old lines to Milwaukee and Chicago—apparently the natural routes to market—the difficulty of a shallow canal at Sault Ste. Marie, since deepened, making freights higher from Duluth to Buffalo than from the Lake Michigan ports, and the absence of a market at Duluth. After a hard fight for seven years the struggle was abandoned, and in 1876 and 1877 Duluth sank into the depths of despondency, with a diminished business, diminishing population, and an increasing debt. But the rapid settling up and occupancy by farmers of Western Minnesota and Northern Dakota turned the tide and ushered in an era of prosperity by the force of natural trade selection. For the product of this great, rich northern wheat belt, the leading competitor is Minneapolis, but this matchless hard wheat, rich in gluten, goes only to Minneapolis now to be made into flour, much of which in turn goes to Duluth for shipment to Eastern markets. From the time this wheat first found its way to Duluth, the growth of the city has kept pace with the increase of acreage harvested. And right here is where the sanguine statistician gets in his work. This is his argument:

"If within the past five years the receipts of wheat at Duluth have increased from 1,000,000 to 15,000,000 bushels, is it not fair to predict that with the increase in settlement of the Northwest for the next five years the amount will foot up to 50,000,000?"

	Receipts.	Shipments.
1880.....	1,347,070.30	1,459,674.50
1881.....	3,332,170.05	2,865,533.55
1882.....	3,366,342.25	3,335,496.25
1883.....	4,707,903.50	4,586,808.50
1884.....	7,900,436.40	7,732,046.10

As a speculative market the development of Duluth is something extraordinary, there being closed out daily at present from 500,000 to 2,000,000 bushels. Orders to buy or sell 100,000 bushels at a time are not infrequent, and the transaction is closed in less than a quarter of a minute upon the board. The Duluth Board of Trade includes a membership of 200, many of the members being prominent grain dealers in St. Paul, Minneapolis, Chicago, Milwaukee, Buffalo and New York. It was organized in 1881 with a membership of 12, and the present price of a ticket is fixed at \$500, the original figure having been \$100. The members, as a rule, are active, shrewd and enterprising, but ap-

pear to conduct business in a quiet way compared with the style adopted in New York and Chicago. The only change from this method yet chronicled was introduced during the fluctuations of the Anglo-Russian war excitement. But, although nearly moderate in tone, a majority of their transactions are, as has been previously indicated, of the extensive order.

On May 1, the clearances at one bank alone amounted to \$6,781,298.71. The amount of telegraphing required to transact the business of correspondents and customers is extensive. In one month alone it amounted to upward of \$4,000.

The Duluth market ranges about 2 cents per bushel above Chicago prices, because of the superior quality of No. 1 hard wheat, which chiefly arrives here. Every ten minutes during a session of the Board, Chicago quotations are received by telegraph and posted. From 1½ cents to 2½ cents is about the range of No. 1 hard over the highest figure made at the Chicago board sales. Hence arises a very lively opportunity to indulge in what is known as "straddling," in which the telegraph is brought into active requisition. Six grades of spring wheat are included in the Duluth classification: No. 1 hard, No. 1 northern, No. 2 hard, No. 2 northern, No. 3 northern and rejected.

Commission merchants charge consignors 1 cent per bushel for making sales, and in the Board dealings between members the commission rate is ½ cent. Sales always specify the month when the wheat is to be delivered.

The recorded transactions on the board for April were 30,000,000 bushels. There are several houses which will handle during the present year from 75,000,000 to 100,000,000 bushels each. The total board transactions for May were 29,750,000. The biggest day of the month was the 27th, recording transactions amounting to 2,000,000. The board is at present occupying temporary quarters in the Metropolitan block, and the room in which it meets is less than forty feet square. A fine new Board of Trade building of pressed brick, with brown stone trimmings, is now in course of erection. It will be 50x115 feet in dimensions, five stories in height, and was designed by Wirth, the St. Paul architect. It will stand on Superior street, in the business center of the city. Among the members of the board may be mentioned:

Munger & Marshall, A. J. Sawyer, George Spencer & Co., Wright, Ray & Co., Yerxa & Kirkbride, Dunn & Thompson, David Dows & Co., Lenham's Elevator Company, R. Barden, G. S. Barnes & Co., Walter Turle, G. S. Van Dusen & Co., A. B. Taylor & Co., S. S. Linton & Co., Griffiths, Marshall & Co., Hunter & Inglis, E. W. Markell, Andrew Jackson, Clarkson, Leeds & Co., Hunter & McFarlane, O. Dalrymple & Co., W. W. Davis, Owen Fergusson & Co., C. H. Graves & Co., Hooker, Crittenden & Co., Leavans & Fuller. These firms do a regular grain commission business.

The president of the board is M. J. Forbes, and the secretary is B. W. Baker. The vice-president is Charles D. Wright, of the firm of Wright, Ray & Co. Mr. R. Barden, formerly of St. Paul and Minneapolis, leads the "put and call" business transacted on the board. W. T. Hooker, formerly president of the board, came originally from Milwau-

kee, and served with great credit all around.

Mr. B. S. Munger, formerly of the music firm of Munger Bros., St. Paul, is one of the pioneers, both of the board and Duluth. He is one of the projectors of the Opera House block, is interested extensively in elevators and several other enterprises. It was largely owing to his faith, exhibited during the dark days of '73, that Duluth owes her present condition. Mr. A. J. Sawyer is another of the city builders. Col. D. Dodge is another prominent business man, who has the proud distinction of being the first Democratic appointee of this region. There are three banking institutions in Duluth; the American Exchange, with a capital of \$200,000 and a surplus of \$70,000; Duluth National, capital \$200,000, surplus \$25,000. The bank of Bell & Eysters, a private institution, has a capital amounting to \$45,000. The total banking business transacted during last year was \$156,006,781.

A glance at the port of Duluth, with its incoming and outgoing steamers and vessels, steam tugs and sailing boats, together with its magnificent harbor and crowded docks, affords some adequate idea of the city's importance to commerce. Constant dredging and general improvement is under way. During 1884 there were 900 arrivals, a total tonnage of 594,235, and 11,440,500 bushels of grain shipments, 421,000 bushels of which went by rail. The record of the present year will show a large increase over these figures, as a matter of course. The deepening of the canal at Sault Ste. Marie was a great advantage to Duluth in the way of navigation, as it enables the transit of heavily-laden vessels. The barge system renders possible the transit of enormous shipments at low rates, each barge carrying from sixty to seventy thousand bushels. During one day last week there were shipped by boats from Duluth 265,000 bushels, 87,000 going in one cargo. The bulk of the grain goes to Buffalo, thence to Chicago, New York, and the rest of the world.

There are four railroads now running into the city. These are the St. Paul & Duluth, the Northern Pacific, Chicago, St. Paul, Minneapolis & Omaha and the St. Paul, Minneapolis & Manitoba. From the coal and freight docks the St. Paul & Duluth distributes large quantities of coal and merchandise to supply the demand of St. Paul and Minneapolis, and other interior cities and towns along the main line and its branches. The trains return laden with flour and local produce gathered upon the way. These are re-shipped to local points on Lake Superior and to New York, Boston and European points.

The Eastern freight and coal docks of the great Northern Pacific Railroad are also located on the harbor. Besides the coal, freight and other docks and offices, the stock raising and shipping over its thousands of miles of track and branch lines demand large cattle yards and a great capacity for cold storage. From Portland, Ore., the western terminus, the wheat comes pouring in, each hundred miles adding more cars until five trains are the record for a single day. This company also brings in large quantities of silver ore and bullion from Dakota and Idaho. The cars are reloaded with agricultural implements, kerosene, coal, salt, lime, plaster, groceries, etc. The Northern Pacific

has additional southern and eastern connections with the South and East over the double track bridge across the bay, which also admits to Duluth the Chicago, Minneapolis & Omaha, which carries away large quantities of coal, lumber and merchandise.

Among the roads unloading immense quantities of wheat at the elevators for Eastern shipment is the St. Paul, Minneapolis & Manitoba. In return it carries back coal and lumber.

The great feature of Duluth, and the one which attracts attention is the great group of grain storehouses and elevators which can be seen for miles, looming up along the harbor front. It is the necessarily enormous capacity of these huge cavernous bins which permits the steady flow marketward of the great grain tide. So gigantic are these in outward appearance that it is only by sight of them that the novice can grasp the idea conveyed by figures which express millions of bushels of wheat. In Duluth receipts of corn and oats cut but a small figure.

The system consists of six elevators and two warehouses, as follows: Elevator A, built in 1870, with a capacity of 565,000 bushels; Elevator B, capacity 1,000,000; Elevator C, 1882, capacity 1,330,000; Elevator D, 1884, capacity 1,200,000; Warehouse 1, 1884, capacity 750,000; Elevator E, 1884, capacity 800,000; Warehouse 2, 1882, capacity 600,000, and St. Paul & Duluth elevator, 1884, capacity 600,000. Beside these there are now being built two more gigantic elevators, which will be completed by September, with a capacity of 1,500,000 bushels each. This will give a total storage capacity of 8,515,000 bushels. A visit to these great structures is of exceeding interest. Through the open doors below the stranger can follow the railroad track, where it passes from end to end completely through the elevator. Overhead in the cool darkness is a forest of timber and iron beams supporting the enormous bins. From above depend long tentular arms or tubes, which absorb in a constant ascending stream the wheat as it is shoveled from the car into pits below by means of huge scoop shovels drawn by steam and controlled by a man. From the pit it is drawn upward into bins, where it is weighed, spouted downward into cleansing machines and thence whirled aloft again into storage bins. Sometimes before it reaches a place of rest the wheat traverses the height of the building up and down several times. It is a striking sight, these car loads, ship loads and oceans of pale golden grains, each grain perfect, hard and polished, heaped up in mounds which would bury an ordinary dwelling house out of sight. Men wade about in it ankle deep and shovel it aside as though it were dirt and not more precious than gold or silver.

Before being put through the cleansing process, however, there is more or less dirt mixed with the wheat, and as it flies off with the wind created by its transit through space, the air becomes charged with an extremely irritating and dirty load of minute particles. This dirt is very hard on the throat and lungs, and some of the men wear muzzles or respirators made of tin and oakum, through which the air is filtered.

Between Elevator B and its storehouse runs a belt of four-ply rubber, four feet wide and 800 feet long, said to be the largest belt in the world. Upon its upper surface, hollowed as

it passes over concave rollers, is transported the wheat at an exceedingly rapid rate. Before the wheat is put into the elevator it is inspected by an inspector, who leaves a ticket in the car specifying the grade. When it is shoveled into the elevator pit, the foreman below makes out a ticket, headed as follows, and also enters it upon a book:

Number of scale; Letter of car or bags; No. of car or bags; Grade; Test weight; No. of bin; Remarks.

This ticket is put into a box and sent up stairs to the weighmaster, who keeps a record of its contents. By it he knows what scale to weigh it in, where to put it after weighing, its condition, etc. If dirty it is sent down to the cleaning bins, after which it goes to the separator. This last process usually takes out from two to two and a half pounds for every sixty. When a car load of grain arrives at the elevator it is inspected, weighed and receipted for. These grain receipts are good as bank notes, regular engraved certificates signed by proper authority. They circulate as grain from one to ten thousand bushels, whatever the market, or the value of the wheat may be—and are good at bank as collateral. It is stored in the warehouse for the first 20 days at the rate of 1½ cents a bushel. After that period the storage charge is one-half a cent for every ten days. The certificates are, when desired, divided up into smaller amounts or quantities, known as splits, for convenience in loading vessels.

When a vessel is to be loaded with wheat all that is necessary is to get a shipping order from the foreman of the elevator, tie up alongside the elevator dock, lower a telescopic iron spout into the vessel's hatchway, turn on a valve and the business is done in a few moments. The wheat is delivered under inspection into the vessels at a cost of 40 cents per 1,000 bushels to the shipper. The month rate for storage is 4 cents from Nov. 15 to June 1. For cleaning grain in the elevator one-half a cent per bushel is charged. For weighing the charge is 25 cents per car load to or from cars, or 20 cents for 1,000 bushels from elevators to vessels. The inspection rate is 25 cents per carload and is charged in the freight bills.

There is considerable precious mineral yet undeveloped in the region surrounding Duluth. The subject is so exhaustive, however, that it will, in the near future be made the foundation of a special article in these columns.—*St. Paul Globe*.

THE lady clerk in a baker's shop says wedding cakes are supplied to suit the occupation of customers; thus, for example, to musicians she furnished an oat cake; to one living upon his friends, a sponge cake; to editors, a spice cake; to pugilists, a pound cake; and so on.

THE Indians of the Menominee reservation, in Shawano county, Wisconsin, are allowed to cut burned or down trees only into logs for sale. But they have "got on to a racket" that beats the government agent the same as a white man would. If the government wants burned logs, the government can have them. The aboriginal logger, realizing that a technicality can be secured by burning the standing trees, piles brush around the green pines and speedily converts them into burned log timber. It is thus that the enterprising remnants of the noble Menominees earn an honest income each winter.

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OPERATIVE MILLERS' ASSOCIATION.

The object of this Association is to unite all practical millers, to give aid to its members, to assist each other to procure employment, to establish a widows' and orphans' fund, and for the advancement of the art and science of milling. The officers of the Association are: Dan J. Foley, President; Tom Stoutenberg, First Vice-President; John T. Gebble, Second Vice-President; A. Snuggs, Secretary and Treasurer. 321 Howard Street, St. Louis, Mo.; Dan J. Foley, Alex. Frazer, David Pollock, Trustees. Hall at 110 N. Fifth Street, St. Louis.

A PATENT law has been enacted in the Hawaiian Islands. The life of a patent is fixed at ten years. The cost is about the same as for an English patent.

DURING the year 1884 there were manufactured in the United States 7,451,771 barrels of beer. Two Milwaukee breweries head the list, Philip Best Brewing Co. with 874,770 barrels and the Joseph Schlitz Brewing Co. with 848,000 barrels.

VOL. I, No. 1, of *The Miller*, published by John D. Nolan, of Chicago, has made its appearance. It is a good-looking paper, and as we understand it, will strongly advocate the use of the old millstone.

WE call the attention of shippers and travelers to the new advertisement of the Goodrich Transportation Co., running elegant steamers to nearly all prominent points on Lakes Michigan, Superior and Huron.

THE value of the exported bread-stuffs from this country in the eleven months of the present fiscal year exceeded those of the corresponding period of last year by \$1,875,092. The largest increase was in wheat and oats.

In New York City, C. A. Buddensick, the criminal builder, was found guilty, June 18, of manslaughter in the second degree, as charged in the indictment on which he was arraigned. The penalty is from one to fifteen years in State's Prison. Notwithstanding he is making efforts for a new trial, there is little doubt but that he will meet with deserved punishment. The testimony given against him was of the most damaging character.

PERSONAL.

H. CORDELL, head miller at Gilbert & Barber's mill at Lake Geneva, Wis., called on us June 9.

JOHN M. HILL, of New York, called on us on his way to take a position in the Pillsbury B mill at Minneapolis.

THE headquarters of The Millers' National Insurance Company have been removed to 205 La Salle street, Chicago, Ill.

R. BIRKHOLZ, M. E., of Milwaukee, and Mr. Zaun, the mill-owner at Cedarburg, Wis., called at this office recently.

MR. FENDER, of Kirk & Fender, Minneapolis, made us a brief call during June.

B. J. OLIVEY, head miller of Thornton & Chester's mill, Buffalo, N. Y., has gone to Europe for a few months. His friends made him a handsome present before leaving.

ROBERT M. HUBBARD, general agent of the Minneapolis Miller's Association, died at Ashland, Wis., at noon on the 15th inst.

C. F. HALL the gentlemanly editor of *The Modern Miller*, of Moline Ill., made us a pleasant call June 20.

MR. JOHN D. NOLAN, publisher of *The Miller*, and Mr. P. G. Monroe, Gen. Western Manager of the American Railway Publishing Co., called on us recently.

MILWAUKEE AND MANUFACTURING.

There are few cities which have so many advantages of practical importance in the eyes of manufacturers as Milwaukee, and we hope that many eastern capitalists will visit our city during the present summer, not only for the purpose of a sojourn here to enjoy the pleasures and beauties of this greatest of western summer resorts, but to examine carefully the excellent field we have here for manufacturing institutions of all kinds. Most of those now in operation here, and they are many in number, will be found to be doing a profitable business. The city is growing rapidly. The people generally are frugal and industrious. There are no Blue Mondays here among the laboring classes. The working man, if he drinks at all, generally confines his potations to a temperate amount of lager beer. This steadiness in the habits of the working men in Milwaukee, is highly advantageous to both employer and employee. The transportation facilities by rail and water are first class, as can be seen at a glance by referring to any map. Real estate and rents are much cheaper here than in any other place we know of any considerable importance—much cheaper than in Chicago, Indianapolis, Detroit, St. Paul, Minneapolis or St. Louis. Taxes are comparatively lower than in most any other city. The climate is good; the city the healthiest on the list, and as for beauty—where is there a handsomer city? We have visited many, but take it all in all, we prefer Milwaukee. Milwaukee has the reputation abroad of being a slow-going but substantial city, which has been true; but in the last few years it has made rapid strides in the way of improvements, and real estate is increasing in value, so it stands to reason that the sooner intending investors establish themselves here, the less it will cost to start with, and the surer the profit by increased value.

As a location for the successful and profitable manufacture of flour, Milwaukee is unexcelled. As good wheat as can be had in Minneapolis, can always be procured here nearly as cheap and at times cheaper than in Minneapolis. Steam power is necessary, of course, but already steam power has been introduced to the leading flour mills of Minneapolis. Coal can be delivered cheaply, and the best of facilities for the receipt of wheat and shipment of products are at the very doors of all our mills. We believe the ledgers of our millers will show as great a profit from the manufacture of flour in proportion to capacity as can be found in Minneapolis or St. Louis. The largest mill-building establishment in the United States is located here, and in short every thing desirable to make the milling business pleasant, convenient and profitable. In conclusion we would say to parties in the East or elsewhere, having money and brains to invest, come and visit Milwaukee and carefully examine the advantages offered here for the establishment of manufactories of various kinds.

STRENGTH OF TIMBER BEAMS.

The formulæ given by Tredgold are too abstruse for general purposes. There is, however, one given by Nicholson which is simple, and not far from the truth. A number of experiments were made on pieces of various woods, each one inch square and a foot long, and the weights which broke them recorded. Then as this weight c is to the length of any given beam in feet l so is the weight the beam will have to bear (in lbs.) w to the breadth b multiplied into the square of the depth d of the intended beam; or, $c:l::w:b \times d^2$. Any of these three being given, the fourth is easily found. The breaking weight of Memel fir he gives as 330, that of oak he gives as 810; but this last seems too much. Suppose there is a warehouse 16 ft. wide, the girders of which are 10 ft. apart, and each superficial foot is to carry 8 cwt., or 836 lb. Then as each girder supports $16 \times 10 = 160$ ft. superficial, and as each foot is to carry 836 lb., the total weight to be carried is 53,760 lb., distributed over the whole, or half this, 26,880 lb., in the center. Then, $330:16::26,880:1,303$, or the breadth multiplied into the square of depth. But this is breaking weight, and no timber ought to be used of less strength than four times this. Then $1,303 \times 4 = 5,212$, the least amount we ought to reckon upon. Now we have our choice either to assume a breadth or a depth. Suppose we are confined to 17 in. for the latter.

5,212

Then $\frac{5,212}{17 \times 17} = 18$ in. very nearly. If we as-

5,212

sume 15 as our breadth, then $\frac{5,212}{15} = 347$, the square root, which is nearly 19 in.; so that we may have a girder 18 in. wide and 17 in. deep, or one 15 in. wide and 19 in. deep, as we please. — *The Architect.*

DESCRIPTION OF WADE & WARDELL ROTARY ENGINE.

This engine consists of a solid, cast iron cylinder, having a core at the center of sufficient diameter to serve as a steam chest or supply chamber. The cylinder is slotted lengthwise for its full length, at four equal distant points, each slot being deep enough to accommodate one of the four sliding piston valves, beneath each of which is a port communicating directly with the centrally located core or supply chamber. To this cylinder are attached two heads, one on each end, of a larger diameter than the cylinder, and slotted radially to correspond with slots in the latter, thus giving support to the piston valves at each end while they are out and working. Exactly at the center of one of these heads, the steam supply pipe enters, reaching into core or supply chamber mentioned above, and to the other head is attached the main shaft. Surrounding the revolving cylinder and of equal length, is placed a stationary ellipsoidal casing, being longest in its vertical diameter, and in its horizontal diameter just equal to the diameter of the revolving cylinder. This casing reaches from inside face of head, to which shaft is attached to inside face of head through which steam pipe enters. The vertical or longest diameter of ellipsoidal space is less than the diameter of heads. The piston valve mentioned above, are each of same length as the revolving cylinder, and of width sufficient that, when pressed out against the inside of ellipsoidal casing, a

portion of their width still remains in slot in the cylinder, thus supporting the valve for its full length as well as having it supported at each end by the slots in the heads. These valves are each cut away a trifle on one side or face, for the greater portion of its width and length, being left full thickness at the outer edge. Located within the core or supply chamber at the center of revolving cylinder are two automatic cut-off or expansion valves, which are connected directly with the governor, by a stem passing lengthwise through steam pipe, by which they are operated to cover and uncover the ports underneath each of the piston valves, as the load varies. The whole supplied with necessary stuffing boxes, adjusting screws, etc., for taking up wear and preventing leakage. A cut showing the appearance of this engine can be seen in the advertisement on another page, and circulars with full description, illustrations, prices, etc., can be obtained by addressing the manufacturers, Messrs. WADE & WARDELL, Cadillac, Mich.

MANAGING BOILERS.

"I thought you said that injector would feed my three boilers." "So I did, and it will." "Well it won't, and I know it, and I won't pay for it." "Won't you?" "No." "We'll see; where is it?" "Out in the engine-room, of course; but you don't want to trifle with the engineer." "No! why?" "Oh, you will find out." Imagine my feelings while passing from office to engine-room. "You are just the man I want to see. Here is this — injector you said would feed these boilers, and the — thing won't feed one." "Won't it?" "No." "Is it properly put up?" "Yes." "Well, if it is, it will flood them inside of one hour." "I'll bet you \$10 that it's put up right, for I did it, and I know how, and that it won't supply one boiler." When arguments fail to convince there is one line always open — i. e., money. It will do what arguments, ridicule and reason will not — bring a man to his senses. The \$10 was promptly covered, and then we proceeded to inspect the injector. "There it is now — what do you say?" Heavens! Fan me with a coal shovel, or I'll faint. There was an injector that required 2-inch connections and the supply pipe was $\frac{1}{2}$ -inch. No use of writing the language used, but the air was sulphurous around there for a time, and engineer and employer came in for their share. Enough to record here is, employer was informed that he could settle or stand a suit. He read instructions furnished with injector, and concluded that his side of the house was to blame, and settled. We kept Smarty's \$10.

"What are you stopped to-day, for?" "Oh, the engineer let his water get low and burned the boiler, and the old man is getting it repaired. It will cost two or three hundred dollars, because he will have to pay a forfeit for not getting that job out on time." The above was overheard a day or two since, and inquiry revealed the fact that a \$10-per-week-sweep-the-floor work-in-the-yard engineer had really burned the boiler, and that the whole loss would be at least \$500. Did that employer learn a lesson? No, he could not see the point; and it is to be hoped that he will pass through the same experience again. Don't waste sympathy upon him — he is not worthy. — *Boston Journal of Commerce.*

PLEASANT PARAGRAPHS.

A SHREWD old lady cautioned her married daughter against worrying her husband too much, and concluded by saying: "My child, a man is like an egg. Kept in hot water a little while, he may boil soft, but keep him there too long, and he hardens."

STYLE IN KENTUCKY.—Kentucky Tailor, [taking measure for trousers] to customer— "Will you have one or two hip pockets?" Customer—"Two." Tailor—"Pint or quart size?" Customer—"Quart."—*N. Y. Sun.*

A YOUNG Yorkville physician, who has just established himself and has very little practice, is noted for his braggadocio. One of the older physicians meeting him on the street, recently, asked him how he was coming on.

"I've got more than I can attend to," was the boastful reply. "I had to get out of my bed five times last night."

"Why don't you buy some insect powder?" asked the old doctor.

OBSTINATE AS A PIG.—A party was once discussing the obstinacy of a pig, when one of the party, who defended the pig, offered to bet that he would make a pig walk up a flight of stairs. The bet was immediately taken, the pig procured and placed at the bottom of a flight of stairs, and the bettor challenged to perform the feat or forfeit the bet. He placed the pig's head toward the top of the stairway, and then, seizing hold of his tail, pulling backward with a strong hand. The pig from his natural obstinacy, pulled the other way, and mounted the stairway and kept ascending till he reached the top. And thus the bettor won his bet, by proving the fact of the incorrigible obstinacy of the animal.

He tapped the egg gently with his knife and it popped, and people all over the house began to examine the gas fixtures to see if the gas was properly turned off.

"This egg doesn't seem to be quite fresh," remarked Gilhooly, having opened the window.

"I 'spected dat egg wasn't all right," remarked the colored waiter.

"Why then didn't you tell me so?" exclaimed Gilhooly.

"Bekase, ash, I wasn't quite sure ob hit, and I's always willing to gib a gemmen de benefit of de doubt."

"But you told me the egg was perfectly fresh; that it was laid yesterday."

"I told yer dat bekase I didn't want ter be too previous-like in spilling yer appetite."—*Texas Siftings.*

A FINANCIAL TRANSACTION.—"Whist, Mickey—d'ye see dat yaller dog?" said a ragged street archin to another last evening.

"Yis; dat's Alderman Murphy's Scotch tarrier—he's no good. Ye want to leave him alone, or the alderman 'll get ye run in."

"Who's to know it? We'll take him to de pound and get 50 cents for him, and tell de alderman we saw some boys takin' him away."

Half an hour later the dog was in the pound.

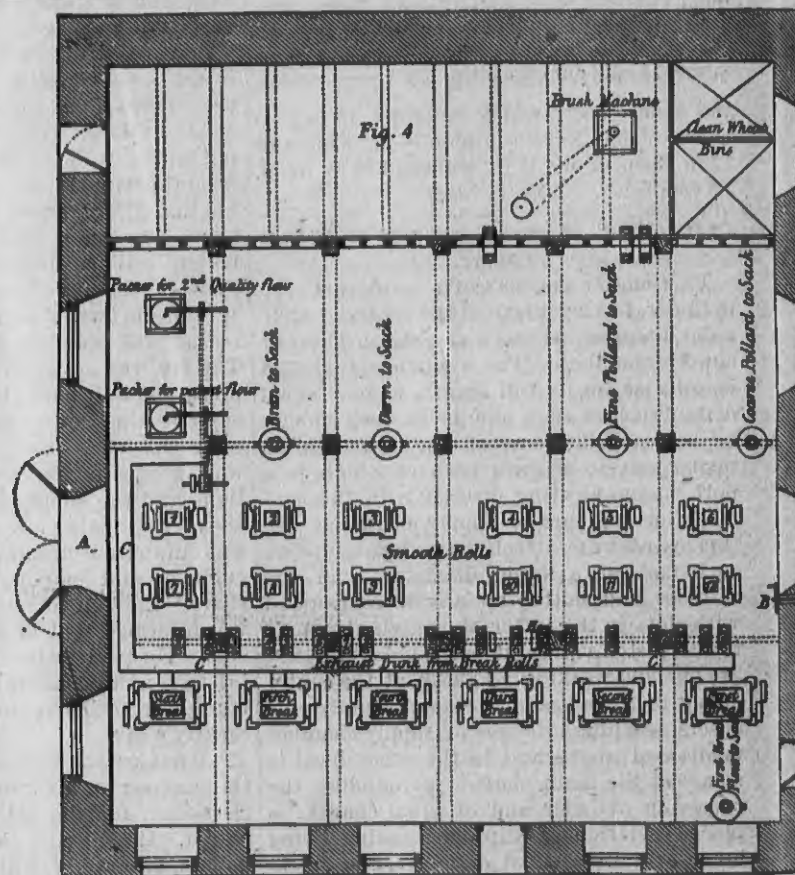
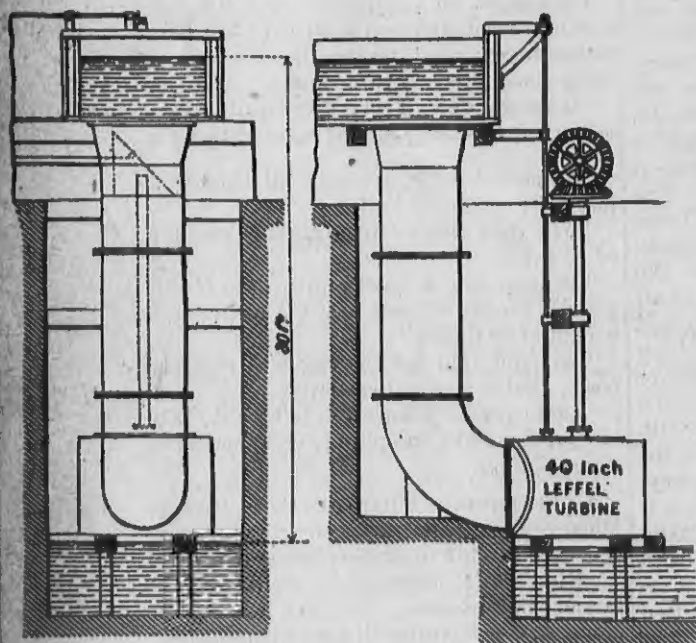
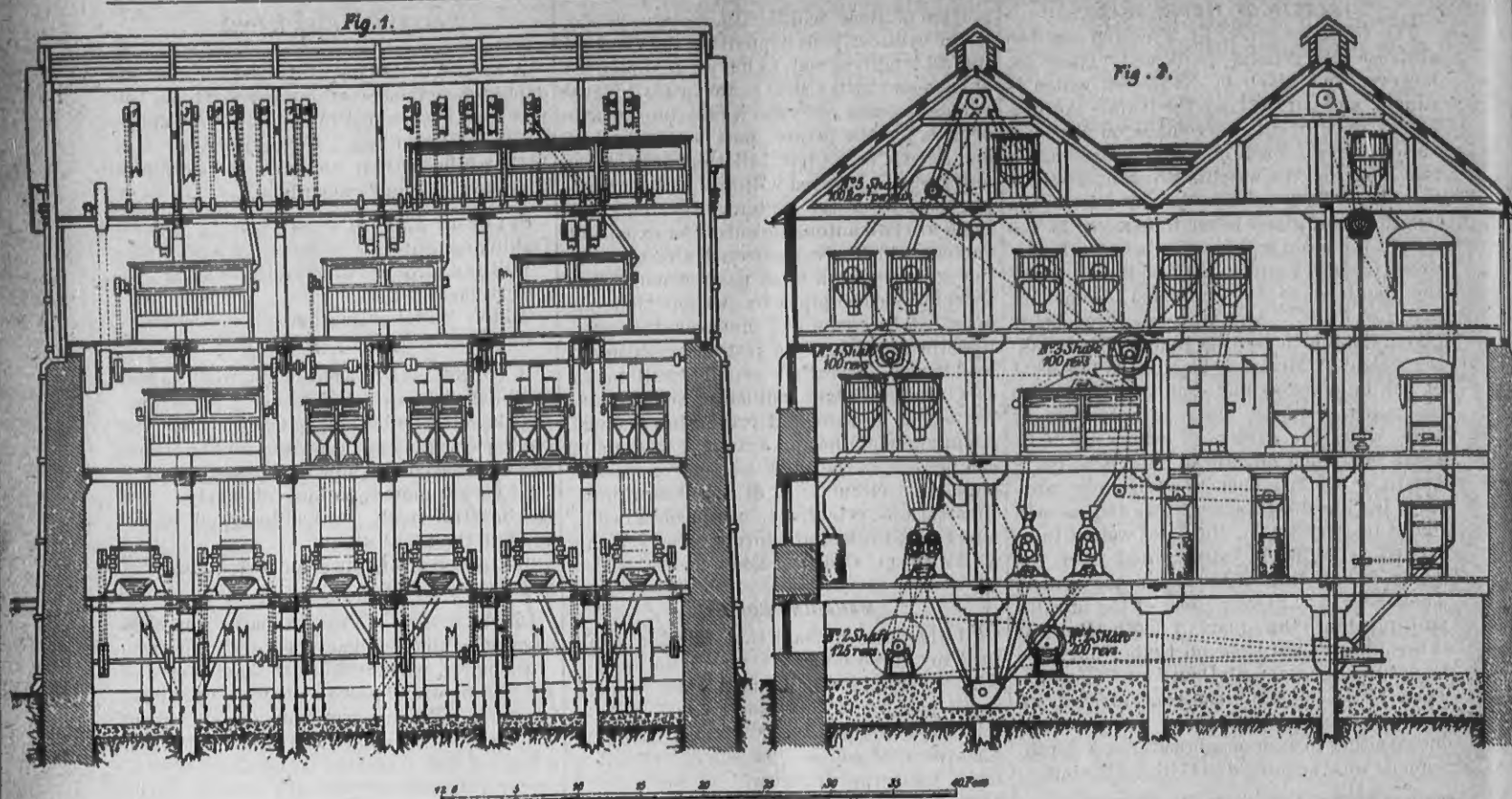
"My dog, d'ye say?" shouted the alderman.

"Who dared to take my dog?"

"I sawed de boys a-haulin' of 'im orf," said Mickey.

"Here's 50 cents for you my boy,"

Then the alderman went to the pound and paid \$1 to get the dog out.—*New York Sun.*



ROLLER MILL AT COVINTO, CHILI.

ROLLER MILL AT COVINTO, CHILI.

Roller milling had become popular on the continent of Europe and in the United States some time before its adoption to any considerable extent in England. Thoroughness is a characteristic quality of the English people, but their conservatism and caution are equally marked, and doubtless, hindered in

some degree the introduction of the new method which was regarded as a highly radical and startling innovation, and encountered a strenuous resistance. Within the last two or three years, however, it has made rapid progress among English millers and milling engineers, of that as well as of our own country are sending plants for the application of the new system to remote parts of the globe. One of

these is the subject of the accompanying illustrations, which are reproduced from *Engineering*. That journal states that about \$3,500,000 was spent by British and Irish millers in 1884 alone in converting their mills from the millstone to the roller system. The mill here described was erected at Covinto, in Chili, South America, by Mr. J. Harrison Carter, of Mark Lane, London, for Messrs.

Balfour, Williamson & Co., the largest firm of grain merchants in England.

Figs. 1 and 2 of the engravings give side and end elevations (in section) of the mill. The peculiar shape of the building was adopted to withstand frequent shocks of earthquakes which occur in Chili. The three lower floors are built in brick work, the walls of the ground floor being 4 feet thick, and the second floor 2 feet 6 inches thick. The top floor and the roof are built in wood. The wooden columns are connected with the beams and tie-rods, so as to allow a little movement should the building be shaken; this part of the building serves as the wheat cleaning department and is divided by a wooden partition. The warehouse for wheat is about 20 feet from the wheat cleaning part, and the flour store about 20 feet away on the opposite side. The three buildings are connected by a gallery. The wheat is carried across from the warehouse by a worm conveyor, in a wrought-iron trough, whilst the flour, which is sacked in 50-lb. and 100-lb. bags, is carried by natives to the door A on the roller floor (Fig. 4) which leads from the gallery to the flour warehouse.

The motive power is derived from a 30-inch Leffel turbine shown in the engraving (Fig. 3) and supplied by a waterfall of 80 feet. There is ample water, in fact more than is really required to drive the turbine. The turbine runs at 189 revolutions per minute, and gives out 165 indicated horse-power. The upright shaft of the turbine drives a pair of bevel wheels on to No. 1 line shaft in the mill, and the turbine is adjustable from the roller floor by a hand wheel. No. 2 line shaft is driven by a belt from No. 1 line shaft. These two shafts are fixed on the bottom floor and drive the roller mills, and No. 1 line shaft by a half-twist belt also drives on to No. 6 vertical shaft, which drives the wheat-cleaning machinery.

On the first floor (Fig. 4) the rollers are fixed. There are six break roller mills and twelve smooth roller mills. The first break roll on the right hand side is coarsely grooved on one side for the larger grains of wheat, and somewhat more finely on the opposite side for the smaller grains. This machine is fed by the wheat grader fixed above on the second floor. The grader divides the wheat into two sizes, which go to the corresponding sides of the rollers. After the wheat passes the first-break roll it is raised by elevators to the second floor and the first break scalper, which is a double machine and takes out the first break flour. This first break flour is to a large extent the dirt of the crease of the wheat berry. The first break rolls are adjusted so as to touch the wheat slightly and open it across the crease, and thus liberate the dirt lodged in the crease. The overtails of the first break scalper go down again to the second break, and are passed on by the elevator to the second break scalper, and from there to the third break, and so on until the sixth break. The out-siftings of the sixth break scalper, are, however, kept separate from the products of the positive break scalp-ers and are treated independently. In some mills only four breaks are used, and in some as many as seven breaks are used to break down the wheat gradually, but Mr. Carter recommends 6 breaks. The overtails of the sixth break scalper are sent to the bran duster, and the overtails of the bran duster from the finished bran ready for the market.

The twelve smooth rolls are used on the reduction of the middlings, commencing at the right hand side. Nos. 6 and 12 do the first reduction, and so on, making six reductions in all.

The exhaust trunk C is connected with the break rollers and the fan on the second floor, and exhausts the damp air from the break rollers and discharges it into the dust room.

The sacking off of flour, as well as offals, i. e., thirds, pollards, and sharps, is done on the roller floor. Ordinary sacking valves are used for the offals, and "Eureka" sack-packers for the two qualities of flour—patent and second quality.

If preferred, the miller can make one straight run of flour, and not take patent, or the highest class of flour, out. It is found best from a commercial point of view, to take off the flour in proportions of 25 per cent. of patent flour and 75 per cent. of second quality, as a high price is obtained for the former, which is the cream of the flour, while the remainder is still a very superior baker's or "household" flour.

On the second floor are fixed, besides the scalp-ers, the wheat grader and bran-duster, one centrifugal which is used for dusting some tailings. There are eight sieve purifiers in four frames, and nine gravity purifiers. The sieve purifiers treat the fine middlings and dust. The gravity purifiers are for the coarse semolina. The sieve purifiers are fed from the grading reel for middlings on third floor, whilst the gravity purifiers get their feed from the grading reel for semolina on the same floor. The dust and air from each purifier blows into a dust-room opposite each machine, from which the offals (light fluffy stuff, are taken by a conveyor into a sack and the clean air is let out again into the mill. This is attained by means of a suitable drainer cloth, similar to ordinary sail-cloth.

On the third floor are all the centrifugal dressing machines. Four long reels, two for grading, as mentioned before, and two to redress all the flour before it goes to sack. On the top floor only one reel is fixed, which takes the break meal after it first comes from the scalp-ers, and sends the overtails on to one of the grading reels, whilst the out-siftings go on to the dusting centrifugals.

All the elevator tops are fixed in the center of one of the roofs, and discharge the various sorts of material for the different dressing machines.

There are only five lines of shafting to drive the whole machinery in the mill. Nos. 1 and 2 line shafts run at 125 and 200 revolutions per minute; Nos. 3, 4 and 5 at 100. The wheat-cleaning part only requires three elevators, one of which takes the wheat right up into the top of the house from the screw conveyor which drives it from the warehouse. The first elevator delivers into an ordinary scalping reel, which takes the loose dust out of the wheat, thence the wheat goes on to the zig-zag separator, from there on to a smutter, and is finished in the brush scouring machine.

There is also another elevator required to elevate the wheat, after it has been cleaned, into the clean wheat bins, but before it goes there, it passes over a magnetic separator, which takes out any magnetic substances, such as nails, screws, and wire. These hard substances, if not prevented from passing

into the machines, would cut the silks and do serious damage. The third elevator lifts the wheat from the clean wheat bin, and drops it down on to the wheat grader, and from there to the first break roller.

The wheat bin is large enough to hold sufficient wheat for a day and night's grinding, as the wheat-cleaning machinery is only running during the day-time, and is double the capacity of the roller mill plant.

[We are indebted to Messrs. James Leffel & Co. for the use of the cuts illustrating this article.]

CLEANING BRUSH FOR MIDDINGS PURIFIERS.

Mr. C. Wehner, of Buffalo, N. Y., has obtained a patent on a recent invention in cleaning brushes for the silk screens of middlings purifiers, by which a more uniform distribution of the middlings over the screens and a quicker screening action is obtained.

The shaking boxes have the usual detachable silk screens, above which at the top part of the purifier are arranged longitudinal ways for the traversing carriage of a cleaning brush. The carriage is supported by grooved wheels on the ways, on which they are retained by upwardly extending guide rails. On the transverse shaft of the carriage is loosely supported the cylindrical body of a revolving brush. The body has longitudinal recesses into which are fastened leather strips, which are slitted from the edge inwardly and have enlarged openings at the inner ends next adjoining the body of the brush. Intermediately between the strips are arranged longitudinal rows of bristles.

The brush receives simultaneously reciprocating and rotary motion from transmitting mechanisms, so as to traverse over the screens. In the passages of the brush over the screens the slitted leather strips, having openings near the body of the brush, serve to uniformly distribute the middlings, while the bristles act on the meshes of the screen and open them.

When the cleaning brush arrives at one end of its motion a horizontal abutment strikes against a lug, and a bar is shifted in the direction of motion of the brush, so that a shaft is turned and a belt shifter moved in one or the opposite direction. The rotary motion of the brush is reversed when it arrives at the opposite end of the screens, at which point the horizontal abutment strikes against the lug of the bar, so that the latter is moved in the opposite direction. This motion is transmitted to belts, which are shifted so as to reverse the motion of the brush. Simultaneously with the traversing motion thus imparted to the brush, rotary motion is imparted to it by a fixed rack.

A Two-Cent Stamp

sent with your full address to A. V. H. Carpenter, General Passenger Agent, Milwaukee, Wis., will bring to you one of the following-named publications, issued for free distribution by the Chicago, Milwaukee & St. Paul Railway. If you desire to know where to spend the summer, ask for a "Guide to Summer Homes" and a copy of "Gems of the North-West." If you think of going to Omaha, Denver, San Francisco, St. Paul, Minneapolis, etc., ask for "A Tale of Nine Cities." If you want to invest in, or go to, any portion of the Western States or Territories, ask for a copy of our 28-page illustrated pamphlet entitled "The North-West and Far West." All of these publications contain valuable information which can be obtained in no other way.

A LOAF OF BREAD.

[CONCLUDED.]

After breakfast, that morning Polly held a family council. "You see," said she, after repeating the praise of her bread, and the conversation that followed, "I propose, with your permission, to put Mrs. Miller's idea in practice. I shall go first to Mrs. Kemble and tell her how I happened to overhear them, and ask whether she is in earnest in wishing to buy home-made bread. If she is, I will give Mrs. Barlowe, Mrs. Miller, Miss Partridge and Mrs. Thomas the same opportunity, and I shall follow their own suggestion and charge more for it. If a baker's loaf is worth eight cents my loaves are certainly worth ten."

"But the work," objected Mrs. Reynolds. "You will wear yourself out."

Polly laughed as she held up her shapely arms. "I am young and strong" she said, "I guess I can stand it."

"I'd rather you didn't have to do it," said Mr. Reynolds, slowly. "I've been thinking I could get Cristofer to advance the money he offered for those grapes. He could have the next year's crop, or I could pay it off by degrees."

"And saddle yourself with a miserable debt in order that I may flaunt in silk attire," cried Polly indignantly. "No indeed, you've never borrowed from Uncle Cris. for your own necessities—you shan't do it for me!"

"He's your own uncle," said her father. "I don't think he would refuse." But in his heart he was quite as unwilling as Polly to borrow money from this well-to-do brother, whose career had been as successful as his own had been the reverse.

"He shan't have a chance to refuse," said Polly decidedly; "but he shall have the opportunity of helping me, nevertheless. I mean to turn my having an uncle in the commission business to good account."

"How?"

"I'll get him to send me my flour—at wholesale prices—and to be paid for later."

"Will you tell him what you are doing?"

"No, I don't want to advertise my undertaking till I've proved it."

"Then you'd better let me get the flour in my own name," said her father, putting on his hat with a farmer's patience, to plow and replant the ruined corn fields. He did not wish his daughter to do this thing, but he knew even better than she did, how long it would be before the damage could be repaired, and nothing better seemed to offer. If she could make a little money by it he would help, not hinder; but it was not strange that the contrast between his own lot and his brother's rose to his mind again throughout the long, hard-working day, and brought with it a sense of bitterness it had never brought before. They were own brothers, and Christopher's daughter had hardly known what it was to have an ungratified desire, while poor little Polly must go to work and earn her few clothes before she could be married. Who maketh them to differ?

Polly, however, was troubled with no misgivings when they met at the supper table that night. Her round of calls had been entirely satisfactory; Mrs. Dallas and Katrine had praised her prompt determination in terms so flattering that the girl blushed rosily at the repetition. They had insisted upon claiming a share of each baking, "to supersede Talufa's

failures;" and Katrine had invited herself to be Polly's companion in the afternoon's visiting. Mrs. Kemble had been as generous and graceful and kindly as Mrs. Kemble alone could be; she expressed herself delighted by the unexpected fulfillment of her wish, and asked to be supplied with three loaves daily. The others had followed suit, and ordered loaves according to the size of their respective families. "Indeed," said Polly, all in a sparkle of glad excitement, "the only limit to my undertaking appears to be the size of my oven."

"And the measure of your strength," added her mother; "you haven't but one life to live, my dear, and you don't want to be a tired-out wife."

"I shan't be," answered Polly confidently; "you don't half know what a reserve force I have, mother mine."

And so it seemed to be. In spite of hard work—for bread-making is hard work, let who will deny it—Polly was never more "healthy and wealthy and wise," as the old adage hath it. Perhaps the early rising had its effect, for Polly was astir betimes in those August and September mornings. The Kembles and Barlows rejoiced in such breakfast rolls as they had never known before, and the Dallas cook enjoyed an immunity from that form of labor in which she had been peculiarly unsuccessful. Polly might have added many more customers to her list, for the fame of Miss Reynolds' home-made bread was soon noised abroad, but a recollection of her mother's warning decided the girl to confine herself to the half-dozen families with which she had started. She was not making a fortune by any manner of means, but the silver dimes would have grown too heavy for her purse, bit by bit, if they had not been exchanged for the materials wherewith Polly's fingers were busy through the long summer afternoons. Katrine was a more constant companion than ever, and without her aid, Polly was forced to confess that she would never have been able to accomplish all the work that the two rejoiced in together.

"Just forget that I am Jack's sister," said Katrine, trying to command forgetfulness of a fact that she was the first to remember. "Who cares whether it's 'good form'—(though why it shouldn't be, I can't for the life of me tell)—anyhow I mean to help with this sewing, and if you make a fuss about it, I'll never forgive you—not if you marry Jack ten times over!"

"Once is all I've time to make preparation for," laughed Polly, dropping her ruffles as she heard the clock strike, for a second "sponge" was set in the morning, and at four o'clock it must be kneaded and molded, and set for the second rising.

Jack complained that Polly's letters were not half so long as they had been, but no one told him of Polly's new industry—that was to be saved for a later telling. What girl could put such a story into heavy English for her lover. And Katrine kept the little secret, mentally resolving that the tale should be told—as Polly would never tell it—when the right time came.

The summer days were over before one knew it almost; October had come and gone, and gray November had begun its preparations for Thanksgiving. Polly was busier than ever in those days, for the first hint of holiday time seemed to bring Christmas-tide all too near. She had had a measure of succor for which to

be thankful, though more than one planned for extravagance had to be given up with the grape vines. Her two silk dresses had resolved themselves into one modest black surah, and there were still many anxious calculations with regard to those indispensable articles of attire which no feminine ingenuity can evolve "without money and without price." Still she had the comfortable assurance of knowing that she had done her best, and the result was one that Jack need not be ashamed of.

Question and comment had long ceased in Polly's immediate neighborhood, but as curiosity died out in one quarter it sprang up in another. Uncle Cristofer, in making out his half yearly statements, was puzzled to account for the unusual number of barrels of flour that had been sent to his brother. Considering how badly the crops had turned out, it certainly looked as though Tom had been extravagant in this one item of home consumption, at least; unless, Tom, getting the flour at wholesale prices had been doing a little commission business on his own account. Some half-formed idea of looking into the matter, joined to a certain concession to family feeling, which Mr. Cristofer Reynolds occasionally made, induced him stop for an hour or two between trains as he was on his way down from Albany, where he had just completed a very advantageous arrangement with regard to an invoice of grain from the west.

Mr. Cristofer Reynolds, portly and comfortable, buttoned up in his expensive overcoat, felt a pardonable thrill of satisfaction as he compared his brother's surroundings with his own. This satisfaction became annoyance as the third ring of the door bell found him no nearer a welcome than the windy porch.

"Bah!" he exclaimed aloud, "I might have remembered the habit in these regions of never using a front door when a side or back door is attainable." Whereupon he set out on a voyage of discovery, and coolly disregarding the side entrance, which was also closed, appeared at the kitchen door in time to see his pretty niece on her knees in front of the oven, engaged in drawing out a succession of loaves of bread—such bread as gave him a sudden sensation of hunger, so brown and crisp did it look, and so sweet and appetizing did it smell.

Not until the pans were safely landed on the table, did Polly become aware of her unexpected guest, and her surprise and embarrassment deepened the glow in her pink cheeks.

Uncle Cristofer surveyed the picture in silence; the clean, well-kept kitchen, with its shining pans and skimmers ranged in orderly array, the clear, bright fire that felt decidedly comfortable on this cold November afternoon, the row of freshly baked loaves, and Polly in her well-fitting, dark cambric dress and white apron—Polly with bright eyes and flushed cheeks, as presiding genius of the whole.

"Is it for a regiment?" he asked with a twinkle in his shrewd gray eyes; "because if so, I'll join the volunteer corps."

Polly laughed at that, and gave him a warmer welcome than Uncle Cristofer had ever received at his brother's household, where his occasional visits were apt to be characterized with mutual constraint.

"Wait and see," she answered gaily, "pulling out the high-backed, chintz-covered rocker for his occupation. "Father hasn't come in yet and mother has gone up town on an errand, and I can't leave my bread just at present, so

you will have to choose between comfort in the kitchen, and solitary state in the parlor."

"The choice won't take long." Uncle Cristofer unbuckled his overcoat and took the offered chair promptly.

Polly disappeared for a moment, but soon emerged from the pantry bearing a tray with a clean napkin, one of the well-preserved "best plates," a knife and a tiny pat of golden butter.

"Do you mean me to take my dyspepsia hot?" he asked as she broke the light, fresh rolls apart.

"Never mention dyspepsia and my bread in the same breath," said Polly. "Taste and see if I haven't improved on your crude material?"

"No doubt about that," replied Uncle Cristofer; "though even when that is granted the amount of crude material called for has been incomprehensible."

"Is the bread ready, Miss Polly?" asked a small boy, tapping at the window to draw attention to his presence; "mamma wants to know if you can let her have three loaves tonight? We've got a lot of company up at our house."

"I'm afraid not Harry. Tell your mother I'm sorry; she could have had them just as well as not, if I'd known it sooner." Polly deposited the loaves in the boy's basket, while her uncle watched her in amazement.

"So you've turned baker! How does that accord with being a lady, Miss Polly?"

"One might consider them synonymous terms: I found out long ago, that the word 'lady' came from an old Saxon word, *hlæfdie*, which means 'loaf-giver.'"

"And you've been baking up all this flour, and selling bread? What did you do it for?" he asked abruptly. "Can't your father take care of his family without your help?"

"I don't know why he should, if I can help," was Polly's quick retort; "but he hasn't asked for my assistance yet. I'm doing it for myself."

"But what for?" persisted Uncle Cristofer. "To buy finery with?"

Polly flushed hotly. The guess was true enough, in one sense, but she did not like the task of explanation. To her surprise Uncle Cristofer came to the rescue.

"Didn't Tom tell me you were going to marry young Dallas this winter? I suppose that's what you wanted the money for—why didn't you come to me?"

"Why should I, when I could earn it for myself?"

Uncle Cristofer made a guttural sound that might have meant anything, and rose from his chair.

"Is that your father coming? I'll go and meet him."

Polly was left with a little feeling of irritation that she could not altogether account for. Uncle Cristofer had not expressed any disapproval, and more than that could not be expected from him. "Indeed," she drew herself up proudly, "his opinion could make no difference in her action." Still it is always pleasanter when one's conduct meets with approval, and Polly's mind was in a whirl, and in that state her fingers invariably sought the ring, that, being large, could be twisted round and round. A sense of something missing brought her to a startled consciousness of the action. The ring indeed was there, but the seal, with its quaint device and motto, had disappeared.

The proverbial search for a needle in a haystack was not more hopeless than Polly's hunt for her lost treasure. She racked her brain to remember when she had last seen it, but in vain. To and fro she went, through house and kitchen, peering into every possible place, her mother came back while she was so engaged, and while sympathizing fully, advised the girl to wait till morning, instead of following the example of the woman in the Bible, who lighted a candle and swept diligently.

Uncle Cristofer did not appear again. His time was limited, and her father had walked down to the depot with him. Mrs. Reynolds undertook the distribution of the bread, while Polly was continuing her miserable search; but it was all to no purpose, and she gave it up after a while, though determining to rise with the first dawn in the morning.

The sense of loss was her first conscious thought as she woke, and she put her determination into practice promptly. Upstairs and down with careful broom and dustpan did she go, but all to no purpose. Her breakfast was a mere farce, over which she spent but little time. Mrs. Kemble and Mrs. Barlowe would have missed their fresh rolls for once if Mrs. Reynolds had not carried out her daughter's contract. It was, perhaps, nine o'clock in the morning, when flushed and tired, and disheartened, she admitted to herself that it was useless to look for it any longer. She was sitting at the foot of the stairs, her curly locks rough and disordered, where they peeped out from under her sweeping cap, her broom still grasped in one hand, the brush and dustpan at her feet, when the door opened without the ceremony of knock or ring; some one called "Polly!" and in another moment she had found herself—broom and duster and all—clasped in Jack's arms.

Katrine stood in the open doorway, beamed upon them seraphically for a few moments, and then discreetly disappeared.

"Has Polly lost anything?" she demanded, invading the kitchen, where Mrs. Reynolds ruled alone for the nonce.

"I should think so! She's done nothing but look for it since five o'clock, yesterday afternoon."

"And she never—nobody ever would guess where it was found, or who found it last night at midnight," cried Katrine, who was bubbling over with a delight that could not be suppressed.

"What!" exclaimed Mrs. Reynolds, "how is it possible for you to have found the stone from Polly's ring?"

"I didn't; but it found the way to the right person after all—Jack! It's really true! Jack came last night in the 11:30 train—dropped in upon us without a note of warning. All the rest were in bed, and I should have been there if Dr. Seyler had not been so interesting. He was the hungriest man—Jack, I mean, not the doctor!—you ever saw, and I took him down to the pantry, and fed him with cold meat and Polly's bread. The first thing I knew he was inquiring what foreign substance his teeth had run counter to—and there was the seal from his ring. Polly had actually baked it up in her bread, and, more than that, the loaf had come to us and the very slice had waited for him."

"Perhaps Jack didn't want to run off to Polly then and there! Of course I had to tell him the bread story after that. Polly will

forgive me for forestalling her; but you see I really couldn't help it."

"And so Jack is home again," said Mrs. Reynolds, slowly. Jack's coming meant less happiness to her than to the others.

"Come and see him," insisted Katrine, who was too excited to be capable of repose. "They have had time to get used to it by now. They can't expect to monopolize each other forever."

It was a very different Polly from the disconsolate maiden who had been found sitting on the stairs and lamenting her loss. The ring was keeping its stone company in Jack's breast pocket, until such a time as the jeweler could prevent such adventures for the future; and Jack himself was urging his ability to take immediate care of the ring, and Polly, and all pertaining thereto.

It was a day of surprises, for the first mail from the city brought a letter that rounded the tale of Polly's bread-making adventure, giving it a climax quite as unexpected as even the loss and recovery of the seal:

"My dear Nieces:—Accept the inclosed as a token of my appreciation of your pluck and independence.

"Your aunt desires me to say that she insists upon the privilege of providing your trousseau. The first wedding in the family demands more attention than you seem inclined to give it, and both your aunt and cousin will really feel hurt if you refuse them the opportunity of assisting you in your preparations. I am under orders from them to stop for you on my way home from Buffalo next week, and carry you off to the city for a shopping bout.

"As ever, your loving uncle,
CRISTOFER REYNOLDS."

"The inclosed" was a receipted bill for all supplies ordered from Reynolds, Baxter & Co., and it was accompanied by a check for one hundred dollars.

"To think of its all coming from a loaf of bread!" cried Polly, with flushed cheeks and bright eyes.

"No," said Jack, "it came from a brave little woman, who, when things were bad, went to work to mend them."

Whereat Polly blushed more rosily, and denied that she had done anything unusual, and Jack found it necessary to carry her off into a corner to convince her. But the measure of his success it is not given to this chronicler to relate.—*Dorothy Holroyd, in Demorest's Monthly Magazine.*



MISCELLANEOUS NOTICES

Short advertisements inserted under this head for one dollar each insertion, cash with order.

PURIFIERS.—Want to sell 2 Wolf & Hamaker Purifiers, No. 4. In good order, cheap. Address Patterson & Hershey, Saltsburg, Pa.

S. POLLARD, Burnt Mills, Tishomingo County, Miss., wants a partner in said mills. He has between \$2,000 and \$8,000 invested, but the demands will justify an increase of capital. Fine water power.

UNITED STATES MILLER.

PUBLISHED MONTHLY.

OFFICE NO. 124 GRAND AVENUE, MILWAUKEE.

Subscription Price\$1 per year in advance.
Foreign Subscription.....\$1.50 per year in advance.

MILWAUKEE, JULY, 1885.

ANNOUNCEMENT:

MR. WM. DUNHAM, Editor of "The Miller," 69 Mark Lane, and HENRY F. GILLIG & Co., 449 Strand, London, England, are authorized to receive subscriptions for the UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices, where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.

TO ADVERTISERS.

Milwaukee, Wis., July 1, 1885.

To Those Interested in the Flouring Trade:

THE UNITED STATES MILLER is now in its tenth year, and is a thoroughly established and much valued trade paper. It has a large regular list of domestic and foreign subscribers. It is sent monthly to United States Consuls in foreign countries, to be filed in their offices for inspection by visitors. It is on file with the Secretaries of American and European Boards of Trade for inspection of members. Aside from the above, thousands of SAMPLE COPIES are sent out every month to flour mill owners who are not subscribers, for the purpose of inducing them to become regular subscribers, and for the benefit of those advertising in our columns. Every copy is mailed in a separate wrapper. Our editions have not been at any time since January, 1882, less than 5,000 copies each, and are frequently in excess of that (see affidavit below). We honestly believe that the advertising columns of the UNITED STATES MILLER will bring you greater returns in proportion to the amount of money invested than any other milling paper published. Advertisers that have tried our paper for even a few months have invariably expressed themselves well satisfied with the results. Our advertising rates are reasonable. Send for estimates, stating space needed. The subscription price of the paper with premium is One Dollar per year. Sample copy sent free when requested. We respectfully invite you to favor us with your patronage. We shall be pleased to receive copies of your catalogues, and also trades items for publication free of charge. Trusting that we may soon be favored with your orders, we are,

Yours truly,

UNITED STATES MILLER.

E. HARRISON CAWKER, Publisher.

Affidavit Concerning Circulation.

STATE OF WISCONSIN, } ss.
MILWAUKEE COUNTY, }

E. HARRISON CAWKER, editor and publisher of the United States Miller, a paper published in the interest of the FLOURING INDUSTRY, at No. 124 Grand Avenue, in the City of Milwaukee, and State of Wisconsin, being duly sworn, deposes and says that the circulation of said paper has at no time since January, 1883, been less than FIVE THOUSAND (5,000) copies per month; further, that it is his intention that it shall not in the future be less than FIVE THOUSAND copies each and every month; further, that he has paid for regular newspaper postage at the rate of two

(3) cents per pound on domestic and Canadian newspaper mail for the years 1883 and 1884 the sum of \$423.74, showing an average of \$17.66 per month for 24 months; the average weight of domestic and Canadian mail being 88 1/2 pounds per month and the total number of pounds of such newspaper mail sent out during the 24 months ending with December, 1884, being 21,180 pounds. Six copies of the U. S. Miller weigh about one pound. The above postage does not include postage paid on local or foreign papers, Canada excepted.

Subscribed and sworn to before me this 7th day of January, A. D. 1885.

E. HARRISON CAWKER.
G. MCWHORTER.
Justice of the Peace, Milwaukee, Co., Wis.

THE United States committee on inter-state commerce, after taking testimony in the western states, is of opinion that something must be done to regulate the commerce of the country as between state and state.

We desire all millers making a specialty of manufacturing rye flour, to send us their addresses. They will find it to their interest to do so, as we can probably put some business in their way.

STAGER'S Patent Automatic Damper and Steam and Fire Regulator (advertised elsewhere in the paper) is a most useful invention, securing, as it does, economy and safety in the use of steam power. Read the advertisement and write for full particulars.

We desire to call the attention of our readers to our special offers on other pages to regular subscribers. We want every miller, millwright and mechanic in this great and glorious country to become enrolled as a regular subscriber on our list as soon after the Fourth of July as possible.

THE Wisconsin Millers Mutual Fire Insurance Co., of which E. W. Arndt, of DePere, is secretary, has done a very gratifying business since its first organization. The company has now announced its readiness to accept risks outside the State. No risks, however, will be accepted which are not considered first-class.

SOME of our contemporaries are making a great deal of noise about their circulation. We are glad to see them showing up what their circulation really is. The UNITED STATES MILLER has done this for years, and we do not think that our advertisers or contemporaries doubt that we do what we claim. We have in the past and do for the future pledge a circulation of not less than 5,100 copies of every issue, of the UNITED STATES MILLER. We print more sometimes, but never less than 5,100 copies.

THE O. A. BYRNS' COMMON SENSE ROLLER MILL.—The Byrns' Five Break Common Sense Roller Mill (for illustration see advertisement on page 89), manufactured by the VALLEY IRON WORKS, Appleton, Wis., is the invention of Mr. O. A. Byrns, who has had long experience in milling both spring and winter wheat, and he has succeeded in building a roller mill that is believed to be near perfection. The Byrns roller mill with five sets of rolls requires no more room than two pairs of ordinary rolls, or one run of 4-foot millstones. This advantage will be appreciated by small or crowded mills. Only two driving pulleys are required to drive a five-roller machine. It requires very little power. The mill is strongly

and compactly built. The rolls may be made of any desired length, from 6 to 20 inches. Persons contemplating the purchase of roller mills will do well to write to the VALLEY IRON WORKS, Appleton, Wisconsin, for full information.

We acknowledge with thanks the receipt of advanced proofs of the Convention of the British and Irish Millers' National Association, held in Glasgow, June 16, 17, 18 and 19. These proofs arrive however too late for publication. It is stated in the report that over £2,000,000 (about \$10,000,000) have been expended during the past year by British millers in milling machinery. Ex-Lord Provost Ure, of Glasgow, was elected president for the ensuing year.

MILWAUKEE NOTES.

The Reliance Mills, owned by C. Manegold & Son, having a daily capacity of 500 barrels, have shut down for a little while, during which some few improvements will be made and everything put in good shape for a long run. Mr. L. Eckel is the head miller, and takes great pride in turning out first-class work.

The Cream City Roller Mills, run by Messrs. A. W. Curtis & Co., after being thoroughly remodeled have started up. The Gray roller mills are used. The capacity of the mill is about 800 barrels per day. Steam power is used. The mill is now running twelve hours per day, and principally for export trade. Mr. Edward Phillips, an experienced miller, occupies the position of head miller, and Wm. Harrison that of second miller. Under the new management, and with its modern machinery, the Cream City Mill is sure to do a prosperous business.

The Gem Milling Co. has been making some improvements, and have everything in first class order, and have just started up for a long run on export trade entirely. The mill has a capacity of 800 barrels per day.

The Phoenix Mills, Messrs. E. Sanderson & Co., proprietors, have shut down for a short time to make needed improvements. They have just broke ground for the erection of an elevator, which will probably have a capacity of 250,000 bushels. The elevator plans are not yet completed. Another well known milling firm in this city are also contemplating the erection of a large elevator for private use, during the present season.

The Jupiter Mills and Daisy Roller Mills are running constantly. The Empire Mills and North-western Mills are idle just at present.

The Millers National Association wheat crop report, prepared by Mr. S. H. Seamans, the secretary, is universally considered the most reliable report of the kind published.

NEW PUBLICATIONS, ETC.

We have received from the Italian minister of agriculture at Rome, Italy, copies of the reports of the agricultural department of Italy for 1884 and 1885.

No. 19 of Ogilvie's popular reading is just out, containing six excellent stories. This house now claims that they give more reading matter for the money than any other in the United States. We recommend our readers to buy the book and see for themselves. The price is only 30 cents, and is for sale by all news-dealers, or will be sent by mail, postpaid, on receipt of price, by J. S. Ogilvie & Co., Publishers, 31 Rose Street, New York.

COMMENTS ON THE 1885 WHEAT CROP.



COL. BANGER, (Chicago Grain Gambler). Blast the luck! Them sneakins' English and Russians didn't fight after all, and the market's gone agin me. Gladstone's harvested my crop.



UNCLE REUBEN. Ehco now. Dem hoppergrassers done harvested my crop.



MISS SALLY HAWKINS (of Missouri). Don't care if the wheat crop is spiled. Recken the 'bacoy will come out all right.



MR. JACK BINGS.—Well—there's a little consolation left in the jug anyhow, and fishin' is purty fair.

GEMS FROM OUR MILLING EXCHANGES.

POWER REQUIRED TO DRIVE MILLING MACHINERY.

A Michigan subscriber writes asking us how much power is actually required to drive a double 9" x 18" roller mill, and the same question is frequently asked about other machinery used in a mill. The question of power used, whether it relates to any individual machine or to the collection of machines which constitutes the modern flour mill, is an interesting one to the miller, though, unfortunately, it is one which admits of no satisfactory answer. "Circumstances alter cases," and in the above case, our correspondent states only one circumstance, viz., that the machine is a double 9" x 18. We may reasonably infer that it is a belted machine, but whether it has smooth or corrugated rolls; whether it is run on first break or bran; or is used for sizing or low grade stock is not stated. Even if he had been particular in stating conditions, it is doubtful if any conclusive answer could have been given, for the power required must vary with the judgment exercised by the miller in adjusting the machine to its work, regulating its feed and the tension of the belts. What is true of this particular machine is true of all other machinery used in the mill, and the safest guide is the catalogue of the manufacturer, in which he states the power which, in his judgment, based on his experience, his particular machines require. It is probable that in any mill, if the machines composing it are listed with the power the catalogues specify opposite each, the sum total of the column, even with no allowance for friction, would exceed the actual power required to drive the mill by a considerable percentage. This is because every manufacturer of any experience knows it is always best to err on the safe side, and that a machine with a driving pulley too wide on the face, with an inch or two in width of driving belt to spare, will give infinitely less trouble to the user than one where the above conditions are reversed. Another fact bearing on this point is, that most manufacturers realize the bad habit of American millers to crowd every machine to its utmost capacity, and make calculations accordingly.

It might serve a useful purpose if the power required to drive separate machines could be determined by experiment. This, however, can only be done by the millers themselves, and would involve an expenditure of time and money which few millers have time or inclination to incur. It would serve a much more useful purpose if those millers who have it in their power would take the trouble to ascertain how much power is required to drive their mills as a whole. In the case of steam mills, where the engines are arranged to allow indicator diagrams to be taken, as is the case with most automatic engines, this is a comparatively easy matter, and we repeat the offer made in a previous number, to afford every assistance in our power to the owners of such mills to make such tests whenever they desire. We have already published the results of one test of this kind, and shall have others made as fast as opportunity offers. It is important that every fact bearing on the construction and operation of the modern

flour mill should be determined with all possible exactness, and the question of power required is one of the first and most important facts to be considered, because in nearly every case where a mill is built the cost of the power is one of the most important items in the operation of the mill. Again, it is important, especially in the case of water power mills, to know just how much work can be done with the power available. We know of several instances where a disregard of this fact involved the mill owner in serious difficulties and ended in financial disaster. There is altogether too little attention paid to this question of power, both by mill owners and mill builders, and whenever any of our readers have any facts which have any relation to it, they will confer a favor on the trade by making them public.

Too little attention is paid by millers to the condition of the running machinery in their mills, and comparatively few seem to realize that the time spent in keeping such machinery in the best possible running order will yield a handsome return on the investment in the saving of power required to drive the mill. It makes all the difference in the world whether the machinery in a mill is kept clean and well oiled, the bearings properly lined and fitted up, and the working adjustments properly made. A shaft out of line, a belt too tightly strained, a gummed up bearing, or a neglected oil hole count in dollars and cents on the coal pile, and besides, add to the fire risk of the mill. The miller who keeps watch of these little things, insignificant when taken singly, is worth two of the kind that sits on a barrel-head and talks learnedly about crease dirt and corrugations. A well kept and tidy mill will run with less power than a dirty one, and what is equally to the point, will make better flour and more money for its owner.—*Millwright and Engineer.*

CANNED CICADA.—We wish to draw attention to an American product which appears to have escaped the observation of speculators in foods, viz., the 17-year locusts. We have the promise of an exceedingly bountiful crop this year, and there's a lovely chance for a deal in them. Prof. Riley, entomologist of the department of agriculture, recently gathered a lot and had them served up for breakfast. They were dipped in batter and fried like oysters, and had an agreeable flavor. The professor says they are nearly as good as grasshoppers, on which he once lived for two days. Now, the scheme is this: Harvest a million or two bushels of them this year, dip them in batter, fry them like oysters, can them, and for the next sixteen years offer them as dainties under their classic name of "cicada." It might take a year or two to develop a hankering for them, but that assured the profit would be enormous, as many years would elapse before another crop could be secured.—*Milling World.*

SOLENN AND SERIOUS TRUTHS.

There are a great many fine mills in the United States, and a great many fine millers running them, but if there is a single mill in which no further improvement is possible, or a single miller who has nothing yet to learn

about his trade, we should like very much to see them. We were, not long ago, in one of the very best mills in the winter wheat section—one which is widely known by reputation and which really does much better work than the average. Yet the proprietor, who is also a practical miller, expressed much less satisfaction with the results he has obtained than we have seen manifested in a cheaply, poorly arranged, incomplete parody on a gradual reduction mill. On the contrary, his conversation plainly showed that the drift of his mind was constantly towards seeking out methods of improving his mill still further. It is this characteristic which has given his mill the reputation it now has, and it is this which will keep it in the van just as long as it remains under its present ownership.—*Roller Mill.*

THE WARNING FROM THE BAKE OVEN.—Not long since there moved to Chesterton a middle-aged man and his wife, together with a large family of children. They came from New England, and purchased a place on which stood one of the oldest and best known houses to be found in the whole country. They moved in early spring, and when May came, naturally began to explore the place more fully. One day Mrs. Charles, a large, whole-souled woman, with a strong religious temperament almost verging upon superstition, came upon an old bake-oven which had been used in early times, but long ago abandoned. As Mrs. Charles' family was large, she determined to make use of the oven, for the next Saturday's baking. She heated it, put in her dough, and the result was six magnificent loaves of very tempting bread. But on the bottom of one of the loaves appeared the statement: "Died June 15," in old-fashioned but well-defined text. The fact disconcerted the family, and their feeling amounted to consternation when week after week the same statement appeared on the bread—"Died June 15." Mrs. Charles, with her slightly superstitious turn, thought it meant her, and, as the date approached, gradually grew ill. So strong was the power of imagination, in fact, that the day before the fatal one named found her in bed a very ill woman and firmly convinced that the next day would be her last. The news of Mrs. Charles' illness spread abroad and finally reached the ear of an old resident, who lost no time in getting to the home of the sick woman. He found her in what she thought her last hours, but quickly explained that, many years before, he had helped to build that bake-oven, and had used for one of the bottom slabs a part of an old tomb-stone that had been spoiled in the cutting. Everybody in the neighborhood, he said, knew about this peculiarity of old Hannah Kendrick's bake-oven and should have told the newcomers. It only remains to add that Mrs. Charles' superstition rapidly gave way, and her health as rapidly improved.—*Chesterton Times.*

There are men who say, "What's the use of putting a roof on your house? When the weather is pleasant you don't need it, and when it rains you can't put it on." So there are men who say, "We don't advertise when we are busy, because we have all we can do, and when times are slack we can't stand the expense." Which is the biggest fool?

NEWS.

The New London Electric Light Co. are putting in a 60 H. P. Westinghouse Automatic engine.

BURNED—June 10, L. Pound's mill at Lorain, O. Loss \$12,000; partially insured.

Loring & Weber, of La Porte, Ind., are putting an 80 H. P. Westinghouse Automatic engine into their roller mill.

The Cleveland Electric Light Co. have put in two additional dynamos and a third Westinghouse Automatic engine.

The new repair shops of the Mexican International Railway, at Eagle Pass, Texas, are to be driven by a Westinghouse engine of 80 horse power.

Dakota farmers and elevator men are dissatisfied with the Minnesota crop inspection of their wheat and contemplate establishing their own market at Fargo.

E. G. Whiting, a professional inventor, died in Racine, Wis., June 5, aged 84 years. The Whiting plow, manufactured by the Case Plow Co., was one of his most important inventions.

W. I. Chamberlain, secretary of the Ohio board of agriculture, estimates the wheat crop of Ohio for 1885 at 20,900,000 bushels, according to reports received up to June 5.

The Beck, Bransford & Ekdahl Furniture Co. are increasing the capacity of their shops at Union City, Tenn. They are putting in a 125 horse power Westinghouse engine.

The Westinghouse engine finds its way into many peculiar situations. One of the latest is a 125 H. P. engine and a locomotive boiler mounted on a flat car, as a portable outfit to drive some special machinery. When in service, the car is jacked up from the rails, and the engine runs 800 revolutions without other foundations.

The Westinghouse Company, manufacturers of agricultural machinery, Schenectady, N. Y., are putting in a 125 H. P. Westinghouse Automatic engine. The foundation will be a pedestal, about eight feet high, to allow the engine to couple direct to the main line. The floor of the engine room will be correspondingly raised.

H. Balbach & Son, smelters, of Newark, N. J., are gradually changing their extensive works over to the system of independent power. They have at present in use some twelve Westinghouse engines, several of which run night and day, smothered in dust from the ore crushers.

Some of the ways of trade are past finding out. Westinghouse, Church, Kerr & Co., mechanical engineers, of New York, recently shipped two ordinary horizontal return tubular boilers, of 100 H. P. each, by way of England, to Australia, for the use of the Colonial Government.

The Jamestown Gas Co., Jamestown, N. Y., are preparing to introduce incandescent lighting into the business portion of the city. The system to be adopted is now under advisement, and the whole matter, both as to electric installation and the steam power, is in the hands of their consulting engineers, Messrs. Westinghouse, Church, Kerr & Co., of New York.

A LONG ENGINE RUN.—At the present time the Westinghouse engine claims to wear the belt for the long distance championship. A mild case is that of the Fulton Municipal Gas Co., of Brooklyn, R. I., who have two engines of 40 H. P., each of which runs six weeks at a time continuously.

Lombard, Ayers & Co., the oil refiners at Bayonne, N. J., have a 60 H. P. Westinghouse Automatic engine driving a fan, which was started some time last November, and has made 380 revolutions each and every minute without a let up, nights, days and Sundays, up to date. Mr. Leman, the superintendent, says that unless his belt looses bother him, he won't shut down till the spring of '86, say about 252,388,000 revolutions, "be the same more or less." Why not keep on till the end of the Democratic administration?

An artesian well has just been completed at De Pere, Wis. An immense vein of pure cold water flows from it sufficient in quantity, it is believed, to supply all the wants of a city of 5,000 inhabitants. This vein was struck at a depth of about 840 feet, over 400 feet of which was drilled through sandstone. Mr. E. W. Arndt, a De Pere miller, and other citizens of De Pere, have organized a stock company and will put down pipes to supply the city. It is further proposed to sink another well in a different part of

town. The De Pere mills are running half time. Considerable of last year's wheat crop in that vicinity yet remains in farmers' hands.

The Cummer Engine Co., of Cleveland, O., have recently received orders for 170, 75, 100 and 120 horse power, outfits complete, for the Harney Peak Mining Co., of New York; Volney Q. Irwin, of Crawfordsville, Ind.; Temple Pump Co., Chicago, and the Forest City Carbon Co., of Cleveland, O., respectively. In each instance the competition was close, and the Cummer people consider the selection of their engine in these cases a very substantial endorsement of its superior merits, as about every style of automatic engine of any prominence was competing. They have also just shipped a 170 horse power engine to the Lowell Manufacturing Co., of Lowell, Mass., and have a 105 horse power engine about ready to ship to W. Kautsky, of Indianapolis. They report their sales for the Jonathan Mills' reel still on the increase, and that they now run up all the way to ten per day. Their orders, we learn, are coming in from all directions and are promptly filled. They started up a number of their Ballantine refrigerating machines this season in breweries in different sections of the country, and in every instance the machines are said to be giving the best of satisfaction.

The Westinghouse Machine Co. have spent a large amount of time and labor in ascertaining the requirements of lumber and wood workers, and in perfecting improvements in the applications of power. The lumber trade responds promptly to their enterprise, and is disposed to grant the Westinghouse Automatic engine a large place in its confidence. Among the more recent orders we note, James Bros.' saw mill, Kane, Pa., 125 H. P.; J. Cummer & Son, Cadillac, Mich., 75 H. P. for a band saw and 60 H. P. for planing mill; Henry Sherry, Sherry, Wis., 75 and 60 H. P., also for band saw planing mill; J. B. Davis, Jr., Phillips, Wis., 75 H. P. for planing mill; C. A. Beardsley, Chicago, furniture manufacturer, 75 H. P.; Campbell Bros. & Cameron, saw mill, Oshkosh, Wis., 60 H. P.; Richardson & Helms, Kansas City, planing mill, 60 H. P.; Jas. Atkinson, planing mill, Patterson, N. J., 50 H. P.; H. F. Williams, saw mill, La Grange, Ohio, 60 H. P., and many others.

Cut out this Blank--Fill it out Plainly--And Send it

With the proper amount of money addressed plainly to E. HARRISON CAWKER, Publisher, No. 124 Grand Avenue, Milwaukee, Wis. Remit by Registered Letter, Postal Note, Post Office Money Order, Express Money Order, or Draft on New York, Chicago or Milwaukee. Read our Combination offer carefully, and also our Book List.

Publisher UNITED STATES MILLER:

Enclosed find \$..... for which send the UNITED STATES MILLER

for..... year..... and.....

(Insert here Name of any other Papers or Books desired.)

Address.....Name.....

Post Office.....

County.....

State.....

5 COPIES FOR \$4.00, sent post-paid to any address.

WEBSTER'S PRACTICAL A NEW DEPARTURE IN DICTIONARIES.

An Industrial Revolution.—In a large Connecticut manufacturing establishment there is in operation a new style of furnace which produces more steam-power from a consumption of 1,000 lbs of coal than can be generated from 20,000 lbs burned in the ordinary way. In other words, the new contrivance already saves nineteen-twentieths of the fuel, and it is believed that before being publicly announced it will be so improved that the saving will reach 49 fiftieths! The facts already developed are simply incredible to one who has not actually seen them verified.

A Remarkable Coincidence.—While the new Furnace was in process of construction, the editors and publishers of Webster's Unabridged were engaged upon their new work which is as great an improvement upon all previous Dictionary productions, and just as valuable in its way as is the incredible fuel economy above alluded to. Webster's Practical is not only a new compilation by the leading Dictionary House of the world, but it embodies several new features which, for ordinary use, render it pre-eminent among dictionaries—not excepting even the Unabridged.

1st, Condensation.—By grouping all derivative and compound words under their root or leader (as in the "Book" example quoted below), such words are adequately treated in one-third of the space required by the old arrangement. By this means nearly all the desirable material of the four and five-dollar dictionaries is presented in a convenient and handy form in Webster's Practical.

2d, Association.—We comprehend as well as remember things chiefly by their associations. For this reason any one who shall carefully read the "Book" paragraph which we reproduce from Webster's Practical Dictionary, will not only comprehend it more readily, but will be able to remember two or three times as much as would be gained by reading about the same words when treated separately as in other works.

3d, Ready Reference.—Not only do we comprehend and remember more readily by the new grouping method, but we do it in less than a fourth of the time required when the words are classified in the old way. Hence, no one who values time would hesitate to pay one dollar for Webster's Practical rather than accept the best of the older dictionaries as a gift.

4th, Derivative Terminations.—Only the larger dictionaries hitherto published give the derivative terminations. The New American Dictionary, for instance, does not give any of the four variations of so common a word as forbear, while they are all given in Webster's Practical.

5th, The Illustrations.—In Webster's Practical are more numerous and better executed than those of any other abridged or low-priced dictionary.

6th, Prefixes and Suffixes.—Another important feature of Webster's Practical is its peculiar treatment of prefixes and suffixes, which is believed to be more desirable than a separate department of two or three hundred pages which is sometimes allotted to them.

7th, Compendium Matter.—Still another invaluable feature of Webster's Practical is its compendium matter, over one hundred pages of which is devoted to the most complete Pronouncing Vocabulary ever compiled of Biblical, Classical,

cal, Mythological, Historical and Geographical Proper names. With Webster's Practical Dictionary at hand, one need not be at a loss to correctly pronounce or spell the most difficult words.

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Issue of June 2, 1885.—No. 318,989, dust collector, A. Ingraham, Minneapolis, Minn.; No. 319,160, grain meter, J. Will, Audubon, Iowa; No. 319,163, crushing and grinding machine, J. W. Anthoine, Eufaula, Ala.

Issue of June 9, 1885.—No. 319,523, grain and seed separator and grader, W. Tate, Winston, N. C.; No. 319,472, bolting reel, F. Ferrier, Vallejo, Cal.; No. 319,574, vertical centrifugal bolt or separator, L. Gathmann, Chicago, Ill.; No. 319,594, grain register, J. Martin and P. T. Baker, Danville, Ill.; No. 319,995, upright centrifugal flour bolt, L. Gathmann, Chicago, Ill.; No. 319,783, middlings purifier brush, J. Wegmann, Rochester, N. Y.; No. 319,786, conveyor for flour bolts, M. W. Clark, Parma, Mich.; No. 319,788, grain scourer, W. A. Cookrell, Cleveland, Ohio; No. 319,809, combined conveyor and separator, L. Gathmann, Chicago, Ill.; No. 319,822, automatic grain measure and register, P. Kaufmann, Hudson, Ill.; No. 319,909, machine for scouring and cleaning grain, T. Inglis, Leith, Scotland.

Issue of June 16, 1885.—No. 319,988, grain shoveling mechanism, J. S. Metcalf, Burlington, Ia.; No. 320,013, grain cleaner, L. O. and L. E. Stevens, Burlington, Ia.; No. 320,048, oatmeal machine, G. Cottrell, San Francisco, Cal.; No. 320,052, machine for packing bran, etc., F. Dorsey, Hagerstown, Maryland; No. 320,218, machine for sacking, weighing and registering grain, G. H. Caugbrean, Pleasant Hill, Mo.; No. 320,231, flour and meal bin, R. Clarke, Dallas, Tex.; No. 320,282, feeding device for roller mills, G. W. Pierce, Springfield, O.; No. 320,356, grain separator, E. Huber, Marion, O.; No. 320,383, grain weighing and tallying machine, L. H. Murdock, Hartford, Mich.

Issue of June 23, 1885.—No. 320,465, machine for measuring and elevating grain, S. T. Daxon, Perryton, Ill.; No. 320,486, grain granulating machine, G. Malcolm, Tavistock, Canada; No. 320,707, conveyor for flour bolts and middlings purifiers, F. J. Schupp, Marshall, Mo.; No. 320,811, feeder for mill machinery, R. M. Nake, Kansas City, Mo.; No. 320,831, Flax-seed separator, G. Adams, Sherburne, Minn.; No. 320,897, feeding mechanism for mills, P. Fuchs, Davenport, Iowa.

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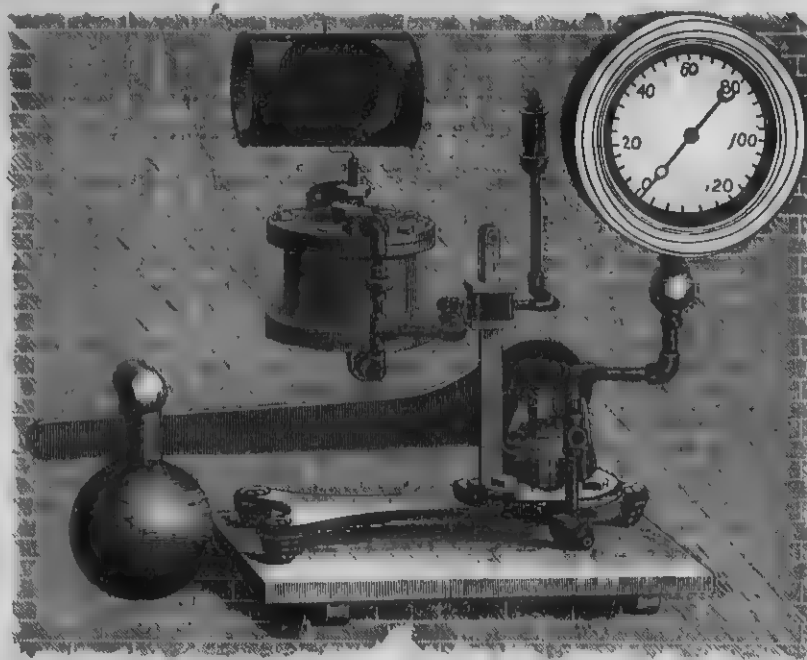
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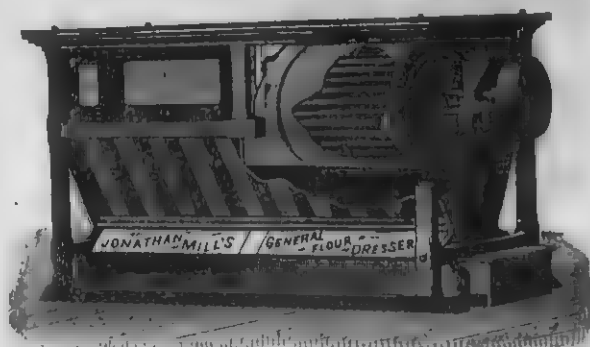
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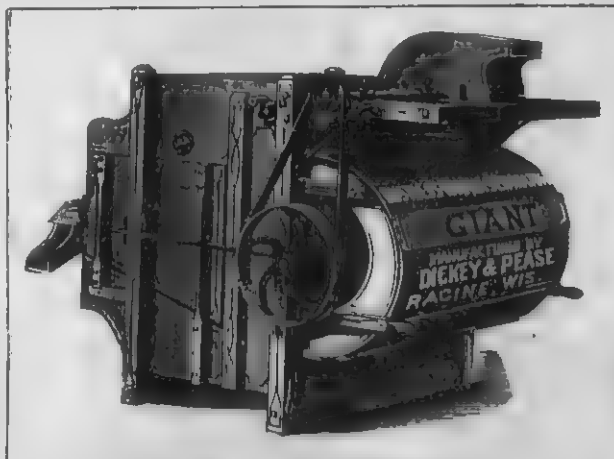
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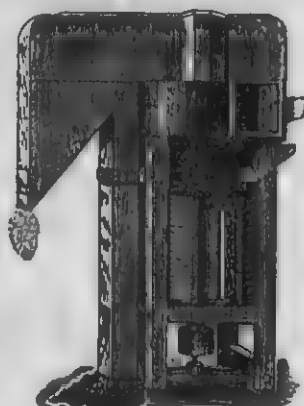
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Our Terms are Liberal, as the New Era of Low Prices Demand they Should Be.

Correspondence Solicited, and References furnished on Application.

To Preserve Iron and Keep Boilers and Flues from Scaling, use

H. P. GRAVES' BOILER PURGER.

It has been practically demonstrated that a scale one-sixteenth of an inch thick on a Boiler will require twenty per cent. more fuel than a clean Boiler, while a scale one-fourth of an inch thick will require sixty per cent. more fuel. The scale is a non-conductor of heat, and its formation in Boilers is general through the United States, more especially in the lime and alkali districts, and enough attention has not been paid to keeping Boilers free from accumulations. The cost of fuel for steam purposes is an important item, and any system for economy in this direction should receive due consideration. I am manufacturing a **BOILER PURGER** which I claim is the best made: *First*.—That it will remove the scale from any Boiler, and, by its continued use, will keep it from forming. *Second*.—That it will not injure the Boiler, Valves or Cylinder, nor foam the water, nor injure the water for drinking purposes. It is easy to use, being in a liquid form, it can be put directly into the Boiler, through the Safety Valve, Whistle Valve, or by Force Pump, or into the Tank. *Third*.—That by its use, from fifteen to forty per cent. can be saved in the cost of fuel, besides the expense of putting in new flues every one or two years.

We also put with pleasure to the following who are using our **BOILER PURGER**: C. A. Pillsbury & Co., Minneapolis, Minn.; Bassett, Hunting & Co., McGregor, Iowa; Milwaukee, Lake Shore & Western Railway; The J. I. Case Threshing Machine Co., Racine, Wis.; Racine Hardware Mfg. Co., Racine, Wis.; Janesville Machine Co., Janesville, Wis.; and all Engineers running out of Milwaukee on C. M. & St. P. R'y.; Ladin & Rand Powder Co., Platteville, Wis.; Edw. F. Allen & Co., Milwaukee, Wis.; Wisconsin Central R. R. Co., Milwaukee, Wis.; Cramer, Aikens & Cramer, Milwaukee, Wis.; V. Biatz Brewery, Milwaukee, Wis.; Ph. Best Brewing Co., Milwaukee, Wis.; Northern Hospital of Insane, Winnebago, Wis.; and many others. Address, for prices, etc., to

H. P. GRAVES,

**CHICAGO, 255 South Canal St. MILWAUKEE, 343 Virginia St.
MINNEAPOLIS, 327 Hennepin Ave. DETROIT, 36 Jefferson Ave.**

(Mention this paper when you write to us.)

THE WESTINGHOUSE MACHINE COMPANY,

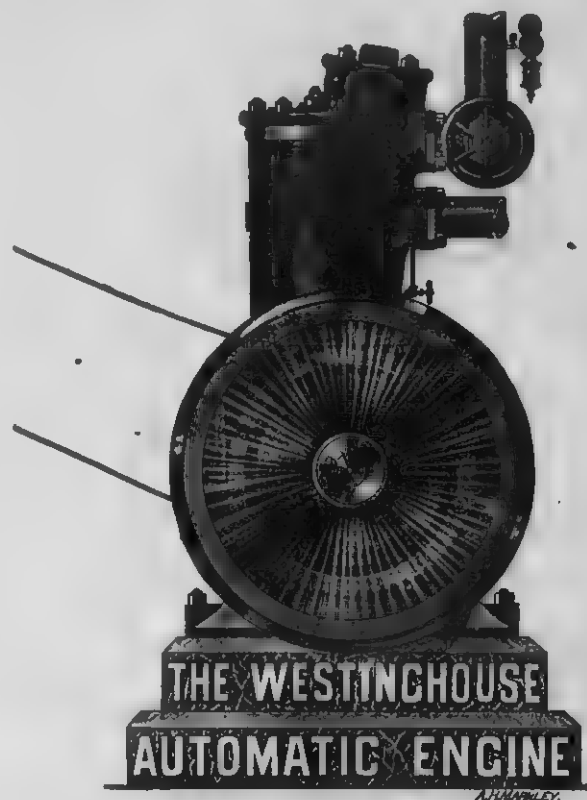
PITTSBURGH, PA.

We admit that we suffer in common with other Engine Builders from the general business depression. We are willing, nevertheless, to publish the list of orders received during the month just closed, not for their number, but as indicating the expressed confidence of the public even in hard times. The list represents a little over one-half our monthly capacity.

List of Sales for May, 1885.

Badger Electric Light Co.	Chicago, Ill.	160 H. P.
.....(2d order)		160 "
Oliver Oil Co.	Columbia, S. C.	150 "
A. A. Andariese	Chicago, Ill.	125 "
Geo. B. Sackett, Irrigation	Berlin, Wis.	125 "
.....(2d order)		125 "
Arbuckle Bros., Coffee Roasters	Brooklyn, L. I.	125 "
Church, Utley & Co., Paper Mill	Rock Falls, Ill.	100 "
Delta Lumber Co., Saw Mill	Thompson, Mich.	100 "
Union Switch and Signal Co.	Pittsburgh, Pa.	75 "
Brussel Tapestry Co.	New York	75 "
Eau Claire Water Works	Eau Claire, Wis.	75 "
.....(2d order)		75 "
Richardson & Heins, Planing Mill	Kansas City, Mo.	75 "
J. C. Reagan, Electric Light	Omaha, Neb.	60 "
.....(2d order)		60 "
Jones, Denton & Co., Contractors	Yonkers, N. Y.	60 "
.....(2d order)		60 "
G. Vollmer & Son, Furniture	Philadelphia, Penn.	60 "
Pennsylvania Steel Co.	Steelton, Pa.	50 "
Ryan Hotel, Electric Light	St. Paul, Minn.	50 "
Town of Union Silk Mills	Union Hill, N. J.	50 "
M. Brand & Co., Brewery	Chicago, Ill.	45 "
Duluth Electric Light Co.	Duluth, Minn.	45 "
.....(2d order)		45 "
A. G. Davison, Flour Mill	Solomon City, Kas.	35 "
Fiske, Thomas & Co., Elevator	Chicago, Ill.	35 "
Lowell Mfg. Co., Saw Mill	Lowell, Mich.	35 "
Gibbons & Henry, Saw Mill	Granville, Mass.	35 "
Lima Paper Mills	Lima, Ohio	25 "
J. H. Oldham, Ginning	Greenwood, S. C.	25 "
Griffin & Wilkinson, Ginning	Fort Mills, S. C.	25 "
Chicago, Rock Island & Pacific R. R.	Chicago, Ill.	25 "
Brown Seamless Metal Co.	Cleveland, Ohio	25 "
Imperial Guano Co., Fertilizers	Norfolk, Va.	25 "
P. Clement	Corvilliers, France	25 "
F. E. Averill	Delft, Holland	25 "
Fred. W. Wolf, Ice Machine	Weatherford, Texas	25 "
Green & Bro., Hat Factory	Danbury, Conn.	25 "
Frank Burt, Threshing	Kalamazoo, Mich.	15 "
Dean, Sickler & Briggs	Peabody, Kan.	15 "
Jones, Denton & Co., Elec. Lgt.	Yonkers, N. Y.	15 "
.....(4th order)		15 "
M. R. Muckle & Co., Machine Shop	Philadelphia, Pa.	15 "
R. M. Bingham & Co., Hardware	Rome, N. Y.	15 "
Oliver Oil Co., Electric Light	Columbia, S. C.	15 "
.....(2d order)		15 "
A. R. McNeil, Farmer	Old Fields, W. Va.	10 "
E. W. McNeil, Farmer	Moorfield, "	10 "
A. M. Inskeep, Farmer	"	10 "
H. V. W. Meyer, Farmer	Madison, N. J.	4 "
Humeston & Shenandoah R. R.	Humeston, Ia.	4 "
Tippecanoe Paper Co.	Tippecanoe, Ohio	4 "

Total, Fifty-two Engines.....2,662 H. P.



SOME FACTS.

Up to May 1st, '85, twenty-one per cent. of our sales have been bona fide repeated orders (2 to 12) from actual users (not agents) and do not include about twenty-five exchanged engines, all of which are counted as single sales. About half of the exchanges were from defective engines,—the balance for increased power or automatic cut-off, the difference being paid in many cases. Nine engines (our earliest) were thrown out altogether. This is our record, with about 1500 engines running.

Send for Illustrated Circular and Reference List.

The Westinghouse Machine Co.,

PITTSBURGH, PA.

SALES DEPARTMENT CONDUCTED BY

WESTINGHOUSE, CHURCH KERR & CO.,
17 Cortland Street, New York.
FAIRBANKS, MORSE & CO.,
Chicago, Cincinnati, Cleveland, Louisville and St. Paul.
FAIRBANKS & CO.,
St. Louis, Indianapolis and Denver.
PARKE & LACY,
San Francisco, and Portland, Oregon.
PARKE, LACY & CO., Salt Lake City, Utah, and Butte, Montana.

D. A. TOMPKINS & CO.,
Charlotte, N. C.
KEATING IMPLEMENT AND MACHINE CO.,
Dallas, Texas.
ROBERT MIDDLETON,
Mobile, Ala.
H. DUDLEY COLEMAN,
9 Perdido St., New Orleans, La.
IMRAY & CO.,
Sydney and Melbourne, Australia.
R. ROGERS,
48 Rue Laftte, Paris.
F. E. AVERILL,
Delft, Holland.

[Please mention this paper when you write to us.]

❖ FIRST BATTLE WON ❖

— BY THE —

MILWAUKEE DUST COLLECTOR

Manufacturing Co

INJUNCTION HAS BEEN GRANTED AGAINST

The Geo. T. Smith Middlings Purifier Co., Kirk & Fender, Samuel Bean and Faustin Prinz.

The MILWAUKEE DUST COLLECTOR MFG. CO. are recognized by the Courts as Sole Manufacturers of the PRINZ DUST COLLECTOR.

Please send in your orders as usual to the

MILWAUKEE DUST COLLECTOR MFG. CO., .

Milwaukee, Wis.

Be Careful not to purchase an Infringing Machine.

[Mention this paper when you write to us.]

"DON'T BUY THE CASE MACHINERY!!"

You have heard this from every agent of the Geo. T. Smith Company, who are our bitterest enemies. You have heard from every roll builder in the country who are our competitors, you therefore know that the parties who use the above statement have reasons for it, but

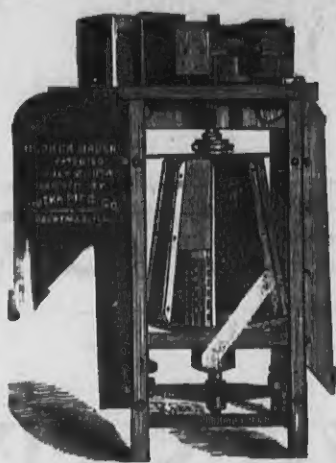
OUR SKIN IS THICK

and we can stand it, so long as we have the substantial evidence by our increasing trade, that the millers are on our side. There is no longer any question of doubt, with all those who have seen our latest improved machinery, that they are the simplest in construction and most perfect in their finish of any line of machinery made in this or any other country. In the last one hundred mills we have built there has been scarcely an instance where a spout or foot of bolting cloth was changed, but the mills have invariably started up successfully from the first day's run. Write us for low estimates. Address,

CASE MFG. CO., COLUMBUS, O.

P. S. A large number of Roll builders are now infringing our Patent Automatic Vibratory Feed for Rolls and Purifiers yet invented, and we caution the Millers against buying machines which embody this Vibratory Attachment, as we intend to protect our rights. **CASE MFG. CO.**

[Please mention this paper when you write to us.]

**EUREKA MANUFACTURING CO.,**

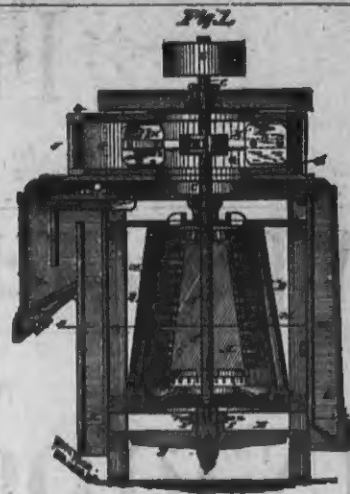
Manufacturers and Sole Proprietors of the

BECKER BRUSH**And Galt's Combined Smut and Brush Machine.**

The Only Practical Cone-Shaped Machine in the Market, for the Reason the Best. ADJUSTABLE WHILE IN MOTION.

THOUSANDS OF THESE MACHINES are in use in the United States and foreign countries, and so far as we know all that use them are pleased. Millers, millwrights, and milling experts claim the Cone Shape Solid Cylinder Brush is the true principle to properly clean grain. All machines sent on trial, the users to be the judges of the work. For price and terms apply to

EUREKA MANF'G CO., Rock Falls, Ill., U. S. A.

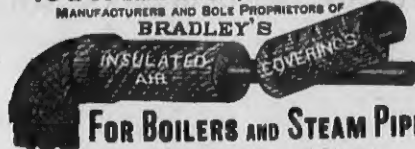


[Please mention this paper when you write to us.]

SHIELDS & BROWN,

78 & 80 Lake Street, - Chicago, Ill.

MANUFACTURERS AND SOLE PROPRIETORS OF

BRADLEY'S**FOR BOILERS AND STEAM PIPES.**

Reduces Condensation of Steam.

FOR GAS AND WATER PIPES.

Prevents Sweating and Freezing.

The best Non-Conductor of Heat and Cold in the World.

Send for illustrated descriptive Circular, and name this paper.

Green Bay, Winona & St. Paul

RAILROAD

IS THE **SHORTEST ROUTE FROM****GREEN BAY**

and all points in

EASTERN * WISCONSIN

-TO-

NEW LONDON,
STEVENS POINT,
GRAND RAPIDS,
WAUSAU,
MERRILL,
WINONA,
LA CROSSE,
CHIPPEWA FALLS,
STILLWATER,
HUDSON,
EAU CLAIRE.

ST. PAUL, MINNEAPOLIS,

and all points in
MINNESOTA, DAKOTA,
and all points on the

NORTHERN PACIFIC RAILROAD and ST. PAUL,
MINNEAPOLIS & MANITOBA RAILROAD.

Passengers from all points on the CHICAGO &
NORTHWESTERN R'Y, south of Green Bay and
Fort Howard, connect with the

G. B., W. & St. P. R. R.

-AT-

FORT HOWARD JUNCTION.

They will find it

THE SHORT LINE

to all the above points.

THE PASSENGER EQUIPMENT

of this Road embraces all the modern improvements
and conveniences that tend to make traveling by
rail safe and comfortable.

Be sure your tickets read via the

Green Bay, Winona & St. Paul Railroad.

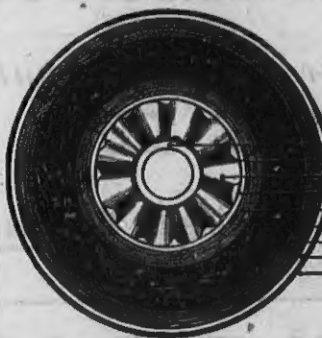
S. W. CHAMPION, General Pass. Agent.
GAVIN CAMPBELL, General Manager.
GREEN BAY, WIS.

MEYER & ACKERMANN,

-MANUFACTURERS OF-

Patent Metallic Fire Proof Steam Pipe and Boiler Covering.

Also Manufacturers of

Cheap Coverings.

STEAM PIPE
AIR SPACE
CORRUGATED RIM
ZINC
SATURATED PAPER
HAIR FELT
PAPER
TIN
PAINT.

BEST OF REFERENCES

FURNISHED ON

APPLICATION

870 Kinnickinnick Avenue,**MILWAUKEE,****WISCONSIN.**

[Please mention this paper when you write to us.]

Did you hear us?

We told you over a year ago
that our Engine was "on the
market to stay." We now tell
you it is the best Engine in the
world, and is gaining favor
every day and everywhere.

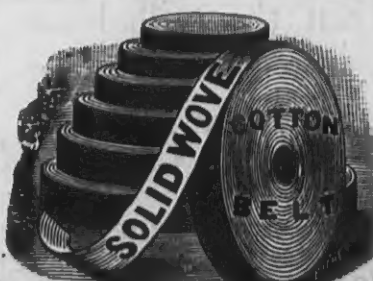
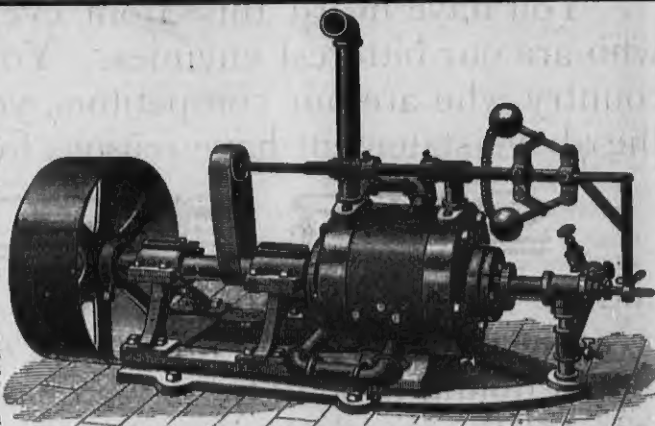
**Highest Economy,
Closest Regulation,
Finest Automatic Cut-off,
Most Durable,**

THE BEST in all respects
and for all uses, and on prices
we can double discount any
engine maker in the U. S.
Yes, it's a rotary, and we can
prove all we claim.

If you want to know more about it send for Circulars and References.

WADE & WARDELL,**Cadillac, Wexford Co., Michigan.**

[Please mention this paper.]

**MILL SUPPLIES** { Everything used in a Mill of every kind always on hand.**Leather Cotton Rubber } BELTING, BOLTING CLOTH.****Elevator Buckets, Bolts, Mill Irons, &c.**

Prices Close and Quality the Best.

The Case Mfg. Co., Columbus, O.

[Please mention this paper when you write to us.]

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

—BUILDERS FROM THE RAW MATERIAL, OF—

Roller Mills, Centrifugal Reels

FLOUR BOLTS, SCALPING REELS,

* ASPIRATORS, * MILLSTONES, * PORTABLE * MILLS, *

AND KEEP THE LARGEST STOCK OF ALL KINDS OF

Mill * Supplies

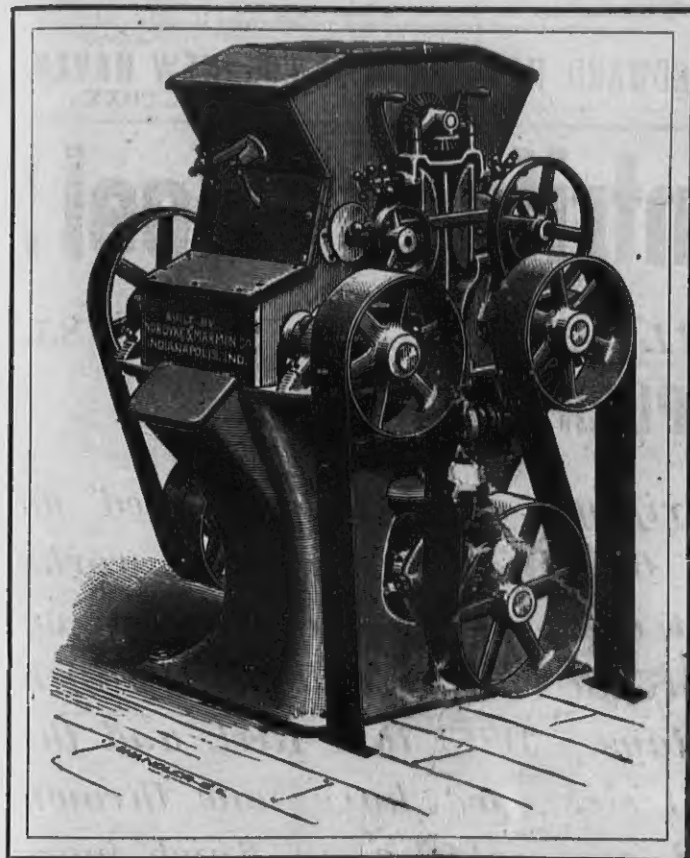
IN THE UNITED STATES

Mill Builders and Contractors.

GUARANTEE RESULTS.

Special Milling Department.

Motive Power and Entire Equipment of a Modern Mill
Furnished under one Contract.



140 BARREL MILL, MEMPHIS, TENN.

MESSE. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen:—Our mill, as planned and diagrammed by you, has been in steady operation for nearly one year past, and in proof that you have given us a successful job, we will simply say that in the face of a very dull trade, and while other mills were running on short time, we have been running full handed, in order to supply a genuine demand for our flours. We must also notice, that although you only promised us 100 bbls. capacity, we easily make 140 bbls. per day without deteriorating in grades of flours. We use No. 2 wheat, and consume 4 bushels and 28 pounds in making a barrel of flour. We make about 28 per cent. of very high patent, 68 of bakers, and 6 per cent. of low grade. Yet our mill is so constructed that we may vary the percentages to suit various markets. We have always been victorious in the sharpest competition, and from the first day of starting we have kept the highest position among all roller mills, either located or represented in this region.

Yours truly,

G. W. COWEN & CO.

MEMPHIS, TENN., December 16th, 1884.

NORDYKE & MARMON CO., INDIANAPOLIS, IND.

Gentlemen:—We have just been awarded all the first premiums on flour offered at the great Fair and Exposition. We made a clean sweep of them all, over all competitors, which includes all the mills in St. Louis, and all over the West, in fact the entries were open to the whole United States. We received 1st premium on Patent Flour, 1st premium on Straight Flour, 1st premium on Clear Flour. This embraces the entire list; the flour was made on your rolls, and you should make the fact widely known. Hurrah! for the N. & M. Co., and Anchor Milling Co.

OFFICE OF ANCHOR MILLING CO.,
ST. LOUIS, MO., Oct. 9, 1884.

JOHN CRANGLE, V. Prest.

NORDYKE & MARMON CO.

NOTE.—The entire reduction of the wheat and middlings is made upon our rolls in this mill.

Yours very truly,

500 BARREL MILL IN MISSOURI.

Read what an Old Miller who has thirty-four pairs of these Rolls in constant use says:

MESSE. NORDYKE & MARMON CO., INDIANAPOLIS, IND.

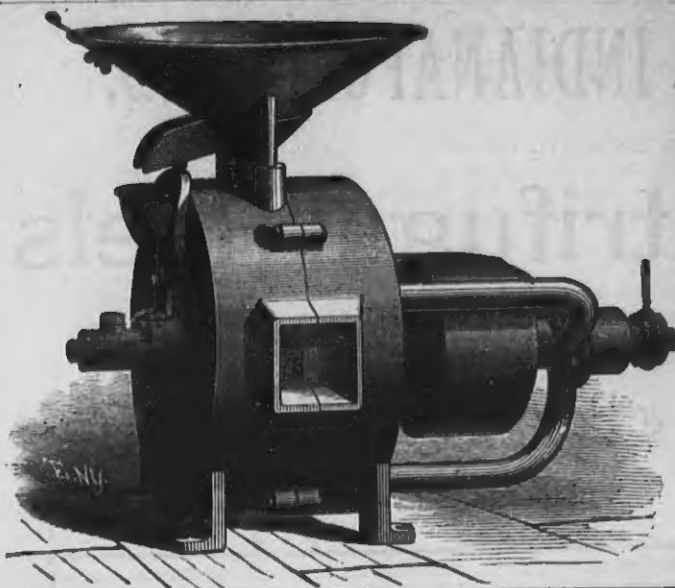
Gentlemen:—In regard to the workings of our new mill erected by you, will say it is working fully up to and beyond our expectations. Our average work is fully 38 per cent. over your guarantee. Since starting our mill last July we have had no complaint of our flour from any market where sold. It gives universal satisfaction, and we have it scattered on the trade from Chicago to Galveston, Texas. Our yields are all that are attainable. We have tested it on both Spring and Winter wheats with satisfactory results on both varieties. Since the mill was turned over to us we have not changed a spout or a foot of cloth, nor have we found it required to make any changes. We have run as long as six days and nights without shutting steam off the engine, not having a "choke" or a belt to come off. The mill is entirely satisfactory to us, and for a fine job of workmanship, milling skill and perfection of system, we doubt if it is surpassed in the United States to-day. It is certainly a grand monument to the ability and skill of Col. C. A. Winn, your Milling Engineer and Designer. You may point to this mill with pride and say to competitors: "You may try to equal, but you will never beat it." Wishing you the success that honorable dealing deserves, I am,

Yours, etc.,

R. H. FAUCETT, Prest.

Letters on file in our office from a large number of small Roller Millers giving as favorable reports as above. A portion will be published as occasion demands.

[Please mention the UNITED STATES MILLER when you write to us.]



THE EDWARD HARRISON MILL CO.,
MANUFACTURERS OF
HARRISON'S
STANDARD GRINDING MILLS
OF ALL SIZES.
10,000 IN USE.

Every Mill Warranted to do just what we claim for it. Write for our 96 page Illustrated Catalogue, and mention this paper.

The EDWARD HARRISON MILL CO., NEW HAVEN, CONN.

Geo. T. Smith Centrifugal Reel!

EVANSVILLE, IND., June 18th, 1885.

THE GEO. T. SMITH MIDDLINGS PURIFIER CO.,
JACKSON, MICH.

GENTS:---The New No. 0 Centrifugal which you shipped us lately is in operation, handling the 6th Break Chop, and works like a charm, which the samples sent will prove. We are driving it with a 2-inch belt and believe it would run as well with 1-inch belt, which we shall try in a few days. With this Reel, and the one gotten of you previously (No. 1 size), we have now thrown out seven 15 foot 30-inch Reels, and are making our finish more complete with much less power and considerable saving in fuel.

You have certainly got the best Centrifugal made in the world, for it has abundance of capacity and requires so little power to run it. Our neighbors who were told that we were using only a 2-inch belt on your No. 0 machine would not believe it, but seeing it, stood in amazement at the wonder.

Yours truly,

HEILMAN ROLLER FLOURING MILLS.

FOR PRICES AND PARTICULARS ADDRESS.

Geo. T. Smith Middlings Purifier Co., Jackson, Mich.

[Please mention this paper when you write to us.]